DOCTOR OF PHILOSOPHY

National oil company reform from the perspective of its relationship with governments: the case of China

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A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

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List of Abbreviations

Bbl/d	Barrel per day
Bcm	Billion cubic meter
BU	Business Unit
Bn	billion
Mn	Million
CMRS	Contract management responsibility system
CNPC	China National Petroleum Corporation
CNOOC	China National Offshore Oil Corporation
CNSPC	China National Star Petroleum Corporation
CIF	Cost, Insurance and Freight
CO	China Oil Corporation
ELG	Energy Leading Group
EDF	Exploration and Development Funds
GDP	Gross Domestic Production
FMRS	Factory Manager Responsibility System
FSU	Former Soviet Union
HSE	Health, Safety and Environment
IEA	International Energy Agency
IMF	International Monetary Fund
INOC	Iraq National Oil Company
IOC	International Oil Company
IPO	Initial Public Offering
KNPC	Kuwait National Petroleum Corporation
MES	The Modern Enterprise System
MGMR	Ministry of Geology and Mineral Resources
MOC	Ministry of Commerce
MOFTEC	Ministry of Foreign Trade and Economic Cooperation
MOF	Ministry of Finance
MOLA	The Ministry of Land and Resources
MPI	Ministry of the Petroleum Industry
NDRC	National Development and Reform Commission
NIOC	National Iran Oil Company
NNPC	Nigeria National Petroleum Corporation
NOC	National Oil Company
NOCL	National Oil Company Libya
OECD	Organisation for Economic Co-operation and Development
OMF	Oil Maintenance Fee
OPEC	Organisation of Petroleum Export Exporting Countries
P-A theory	Principal and agent theory
PABs	Petroleum Administration Bureau
PdVSA	Petroleos de Venezuela S.A

Pemex	Petróleos Mexicanos
Petronas	Petroliam Nasional Berhad
RMB	Ren Min Bi
RUF	The Reserve Usage Fee
PRC	People's Republic of China
PSA	Production Sharing Agreement
ROCE	Return on Capital Employed
ROE	Return on Equity
SASAC	The State Asset Supervision and Administration Commission
SBPCI	The State Bureau of Petroleum and Chemical Industry
SEO	State Energy Office
SETC	State Economic and Trade Commission
Sinochem	China National Chemical Import and Export Corporation
Sinopec	China Petrochemical Corporation
SEC	State Economic Commission
SOE	State Owned Enterprise
SPC	The State Planning Commission
SDPC	The State Development and Planning commission
UK	The United Kingdom
UN	The United Nation
US	The United States of America
USSR	The Union of Soviet Socialist Republics
Unipec	China International United Petroleum and Chemical Company
VAT	The Value added tax
WTO	The World Trade Organisation
YPF	Yacimientos Petroliferos Fiscales

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Xin Ma

Aug 2008

Declaration

I Xin Ma, hereby declare that I am the author of this thesis; that I have personally consulted all the references cited, unless otherwise stated. The work of which this thesis is a record has been done by me and it has not been previously accepted for a higher degree.

Signed ..... 马 欣 .....

Date: ..... 26 - AUG - 2008 .....

Statement

This is to certify that Xin Ma conducted her research under my supervision and has fulfilled the conditions of the relevant ordinances and regulations.

Signed.....

Professor Philip Andrews Speed

Date: ..... 5th September 2013

Abstract

National Oil Companies ("NOCs") play an important role in a country's petroleum industry. Their relationship with their government is much more complicated than those between commercial oil companies and their shareholders due to the government's multi-dimensional role as a shareholder, resource owner, and regulator. As a result, NOCs usually take non-commercial responsibilities and their governments often employ more proactive measures to intervene. Driven by a wide range of factors, the constant revision of their relationship is a crucial component of the petroleum sector reform.

The aim of the thesis is to analyse the effectiveness of NOC reform in achieving respective objectives (both commercial and non-commercial) of governments, and the major factors contributing to that effectiveness or lack of it. The thesis looks at NOC reform to the regulatory framework, the industrial structure, the pricing and distribution system, and the fiscal and financial regimes. It examines the effectiveness of reforms by evaluating the effectiveness of the relationship between governments and NOCs, using the Principal and Agent theory. A case study approach and historical analysis approach are used in analysing NOC reforms in China during the years between 1949 and 2006.

The thesis concludes that the regulatory capacity of government together with its social concerns in reforming oil pricing system are two major factors, which set the pace of NOC reform and decide the effectiveness of it. It therefore shows that NOC reform is often a long term process, as the build up of the regulatory capacity takes years or even decades, as demonstrated in the case of China. The thesis also developed a new analytical framework that can be used to study general NOC reforms in countries other than China.

1 INTRODUCTION

1.1 The objective of the study and research questions

A National Oil Company ("NOC"), by its nature, represents a direct government intervention in the petroleum industry. It is an oil company operating in some part of the petroleum value chain, fully or partially owned or controlled by its government.[1] As a group, NOCs play an important role in the domestic economy, accounting for a large share of GDP, government revenue and export.

As these companies are often "required to achieve public purposes" by their governments,[2] the relationship between NOCs and their governments is significantly different from that between private oil companies and their shareholders. Private oil companies pursue commercial interests comprising of long term growth and short term profitability in order to maximise shareholder value.[3] NOCs, on the other hand, are normally assigned with a wider range of non-commercial responsibilities.[4] Meanwhile, different from their private counterparts, which enjoyed a high extent of autonomy in conducting their commercial operations, NOCs are often controlled by their governments through direct intervention.

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[1] Stevens, P. (2004). National Oil Companies: Good or Bad-a Literature Survey. *CEPMLP Internet Journal (14),* Retrieved 02 April, 2008, from http://www.dundee.ac.uk/cepmlp/journal/html/Vol14/Vol14_10.pdf

[2] Hartley, P., & Medlock III, K. B. (2007). *A Model of the Operation and Development of a National Oil Company*: James A. Baker III Institute for Public Policy, Rice University. p.2

[3] For publicly listed companies, return to shareholders are often measured by a combination of dividend and capital growth.

[4] Aharoni, Y., & Ascher, W. (1998). Restructuring the Arrangements between Government and State Enterprises in the Oil and Mining Sectors. *Natural Resources Forum, 22*(3), 201-213.

Influenced by a wide range of factors, the relationship between a government and its NOC is under constant readjustment and reform. Most notably, since 1980s, a tide of commercialisation and liberalisation had significantly changed the nature of the relationship between government and NOCs, reduced the non-commercial responsibilities taken by NOCs, and the extent and nature of intervention by governments. Meanwhile, market forces have been allowed to play a greater role, both domestically and internationally, in determining oil price and in distributing oil.[5] Some NOCs have been commercialised to such an extent that they behave almost like International Oil Companies ("IOCs").

Despite the growing number of published studies on NOCs, our understanding of NOC reforms and its effectiveness remains insufficient.[6] Many studies have emphasised the effectiveness of reforms in enhancing the commercial performance of NOCs, and ignored the non-commercial agenda of governments. Other studies have viewed NOC reforms over a shorter time period, and failed to recognise the functions of core factors in a prolonged process covering many stages, in which early stages influence the later ones in a complex way.[7]

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[5] ESMAP (1999). Global Energy Sector Reform in Developing Countries: a Scorecard, Joint UNDP/ World Bank Energy Sector Management Assistance Programme. AegisEnergyAdvisorsCorp. (2002). *State Oil Company Privatization,p3.* Stevens, P. (1998). Energy Privatisation: Sensitivities and Realities. *Journal of Energy and Development, 23*(1), 1-14.p1

[6] See Section 1.3 of this thesis for more details on the lack of studies on the topic of NOCs

[7] Victor, N. M. (2007). *On Measuring the Performance of National Oil Companies (NOCs)*: Program on Energy and Sustainable Development, Freeman Spogli Institute for International Studies, Stanford University, Stanford. Hartley, P., & MedlockIII, K. B. (2007). *A Model of the Operation and Development of a National Oil Company*: James A. Baker III Institute for Public Policy, Rice University. Wolf, C., & Pollitt, M. G. (2008). *Privatising National Oil Companies: Assessing the Impact on Firm Performance* (No. EPRG 0805 and CWPE 0811): Judge Business School, University of Cambridge.

The thesis intends to address this insufficiency through an in-depth examination of the process of NOC reform from the perspective of the relationship between NOCs and governments. By exploring the process of NOC reform over a long historical period covering different stages, and from the perspective of the relationship between the government and NOCs, the thesis proposes to answer the research question, *How effective are NOCs reforms in achieving the specific objectives of governments, and what are main factors which contribute to the enhancement of effectiveness or the lack of it?*

The thesis explore the effectiveness of reforms by evaluating the effectiveness of the relationship between governments and NOCs rather than trying to measure it by quantitative data, due to the difficulty of accessing consistent and high quality information relating to NOCs over a long time period. The effectiveness of relationship between governments and NOCs is evaluated by using the Principal and Agent theory.

1.2 The scope of the thesis

The thesis assumes that government is benevolent and that their objectives in reforming NOCs are in the best interests of the country, based on information available to them. This assumption, avoids the analysis of a different set of issues related to the accountability, transparency and governance of government, which requires knowledge in the field of public management and political science, and has been relatively well

covered by a wide range of literature.[8] Based on this assumption, the thesis avoids the analysis of the relationship between state and government, and places emphasis on the relationship between government and NOCs.

The thesis also places emphasis on NOCs in oil producing countries which have a substantial domestic consumption of oil. This approach avoids the narrow analysis of NOC reforms in terms of resource and revenue management, but focuses more on the practical challenges many governments face in regulating their petroleum sector. Therefore, for measures of NOC reforms, the thesis examines reforms to the regulatory framework, the industrial structure, the pricing and distribution system, and the fiscal and financial regimes. The list of countries in this category includes Indonesia, Brazil, and Mexico. Many other countries whose resource base is declining and where domestic consumption is increasing are also relevant benefiting from this research.

Although the emphasis is on the reforms of NOCs, the initial creation of NOCs is also analysed, because this provides an important component of the context for later NOC reform.

1.3 The justifications of the study

The justification for this research lies in the paucity of systematic and in-depth analysis

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[8] WB. (2007). *Investing in Oil in the Middle East and North Africa: Institutions, Incentives and the National Oil Companies* (No. 40405-MNA): The World Bank and Management Sector Assistance Managing Programme. Lahn, G., Marcel, V., Mitchell, J., Myers, K., & Stevens, P. (2007). *Report on Good Governance of the National Petroleum Sector*. London: Royal Institute of International Affairs.

of NOC reforms in achieving both commercial and non-commercial objectives of governments in a historical context. In addition to better understand the historical and possibly future behaviour of a country by extrapolating some elements, such study is also a useful guide for countries contemplating NOC reforms.

1.3.1 The importance of NOCs

A better understanding of the nature and behaviour of NOCs has practical importance for home countries, for international petroleum sector, and especially for IOCs.

NOCs are vitally important for home countries, contributing a large share of GDP, government revenue, and foreign exchange, supplying the domestic market with oil and gas, providing employment, and in some countries promoting domestic economic development by delivering infrastructure and social services. For most countries, the performance of NOCs is vital for the performance of their petroleum sector, the health of the economy and political stability of governments.[9]

NOCs are having a significant impact on the international petroleum sector in terms of their control over revenue, reserves, production capacity, and market share in emerging economies. NOCs control most of the world reserves and production of oil and gas. In 2006, NOCs owned 77% of the petroleum production, and controlled 90% of oil

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[9] McPherson, C. (2003). National Oil Companies: Evolution, Issues, Outlook. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 184-204). Washington D.C.: International Monetary Fund.

reserves and more than 70% of gas reserves in the world.[10] All top ten petroleum companies by reserve held are NOCs, and among the top 25 petroleum companies by reserve held, only 6 are not NOCs.[11] The operational and investment performance of NOCs determines the availability of oil in the market and the possible trends in oil price in short and long terms.[12] Furthermore, NOCs from countries such as China and India, have an increasing influence on the international petroleum market, as dominant players in the domestic, massive and fast-growing market.[13]

The rising influence of NOCs in the international petroleum market also has a direct impact on the future of IOCs. In addition to easy access to reserves, NOCs have accumulated large capital reserves in recent years, and have enhanced their commercial competitiveness through reforms. It is said that old powerful Seven Sisters representing the seven western IOCs have now been substituted by seven NOCs, the so called new "Seven Sisters": Saudi Aramco of Saudi Arabia, Gazprom of Russia, China National Petroleum Corporation ("CNPC") of China, National Iran Oil Company ("NIOC") of Iran, Petroleos de Venezuela S.A ("PdVSA") of Venezuela, Petróleo Brasileiro S.A.

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[10] BakerInstitute. (2007). *The Changing Role of National Oil Companies in International Energy Markets*: The James A. Baker III Institute for Public Policy of Rice University. p.1. Trauber, S. (2007). The Rising Influence of the NOC: The Financial Community Perspective Baker Institute Policy Report No. 35. p.5

[11] Blum, J. (2005). National Oil Firms Take Bigger Role [Electronic Version]. *Wathingtonpost.com*. Retrieved 11th Dec, 2007 from http://www.washingtonpost.com/wp-dyn/content/article/2005/08/02/AR2005080201978.html.

[12] Marcel, V., & Mitchell, J. V. (2006). *Oil Titans: National Oil Companies in the Middle East*. London and Washington, D.C.: Chatham House and Brookings Institution Press. p.2. IEA Concerned About Gazprom's Lack of Investment. (2007). Retrieved 12th Dec, 2007, from http://www.robertamsterdam.com/2007/02/iea_concerned_about_gazproms_l.htm

[13] Scaroni, P. (2006). IOCs Versus NOCs-a New Game? *Petroleum Review March*, 24-26.

("Petrobras") of Brazil, and Petroliam Nasional Berhad ("Petronas") of Malaysia.[14] On the other hand, the IOCs' investment opportunities are constrained by limited reserves to book and by strict scrutiny from financial markets, emphasising short term financial indicators such as Return on Capital Employed ("ROCE"). Many of them have chosen to buy back their shares on a large scale.[15] There are even claims that IOCs may be driven out of business once NOCs increase cooperation with each other, and with services companies.[16]

As a result, it can be concluded that an understanding of NOCs is important for home governments, for the international petroleum sector and for IOCs. Furthermore, as NOCs are in a continuous process of evolution and reform, a better understanding of such reform mechanisms is essential for understanding the future nature and behaviour of NOCs.

1.3.2 The lack of general literature on NOCs and NOCs reforms

Despite the importance of NOCs, as above, there are scant comprehensive studies on NOCs, for several reasons.[17]

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[14] Hoyos, C. (2007, 11th March). The new Seven Sisters: Oil and Gas Giants Dwarf Western Rivals. *Financial Times*

[15] Scaroni, P. (2006). IOCs Versus NOCs-a New Game? *Petroleum Review March*, 24-26.

[16] Trauber, S. (2007). The Rising Influence of the NOC: The Financial Community Perspective Baker Institute Policy Report No. 35. p.5-7

[17] Aharoni, Y., & Ascher, W. (1998). Restructuring the Arrangements between Government and State Enterprises in the Oil and Mining Sectors. *Natural Resources Forum, 22*(3), 201-213. p.2. McPherson, C. (2003). National Oil Companies: Evolution, Issues, Outlook. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 184-204). Washington D.C.: International Monetary Fund. Grayson, L. E. (1981). *National oil companies*. Chichester: Wiley. p.5

First of all, there was a lack of interest in studying NOCs due to the notion that the relevance of NOCs had decreased since 1980. During 1980s and 1990s, liberalisation became a widely accepted way of organising the economy and large number of NOCs were privatised and commercialised. However, under the current situation with rising oil prices and prevailing resource nationalism, more studies on NOCs have be done or launched since 2002.

Secondly, there was a lack of good qualify information on NOCs, due to the highly diverse nature of NOCs and their lack of transparency. Such diversity existed in the objectives, ownership structures, relationships with their owners or shareholders, operations and organizational forms of NOCs and they appear to share very little in common except for the name.[18] Additionally, NOCs were traditionally a group of entities, which were operated with little transparency compared to IOCs, which made it difficult for researchers to acquire information on NOCs.[19] Differences in accounting practices and language barriers presented further challenges in interpreting and comparing available information.

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[18] Nicholls, T. (2005). NOCs 1-IOCs 0. *Petroleum Economist, April*, 4-9. p.6. Sandvold, T. (2001). Groupings of National Oil Companies. *the oxford energy forum, 57*, 12. p.12

[19] Different factors cause this non-transparent practice in different countries. Some NOCs keep their information secretive for national security consideration. Cases include China in 1950s and Libya in 1970s and 80s when information related to petroleum were top national secret. Some NOCs, especially those from OPEC members keep their information, especially those related with reserve secretive, for the purpose of getting the best from the quota policy of the Cartel. Others operate in a very opaque way when NOCs are used by bureaucrats and politicians as cash cow or for rent-seeking and don't want to open for public scrutiny.

Furthermore, most existing studies focus on major NOCs in oil exporting states such as OPEC members, and NOCs operating in developed countries, such as UK, Canada, France, and Norway.[20] Comprehensive studies in English on NOC reforms in countries with significant domestic consumption, such as China, India, Brazil, Malaysia and Indonesia[21] remain limited, particularly due to the lack of impact of these countries on the international petroleum sector. There are also few comprehensive studies on NOC reforms in developing countries, due to the lack of consistent and high quality information available on these countries.

Existing studies also focus either on governance issues, or on international implications of the behaviour of NOCs, or on the management of a depletable resource base.[22] Studies of NOC reforms and of the changes in their relationship with governments are

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[20] Grayson, L. E. (1981). *National oil companies*. Chichester: Wiley. McPherson, C. (2003). National Oil Companies: Evolution, Issues, Outlook. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 184-204). Washington D.C.: International Monetary Fund. Marcel, V., & Mitchell, J. V. (2006). *Oil Titans: National Oil Companies in the Middle East*. London and Washington, D.C.: Chatham House and Brookings Institution Press. United Nations Centre for Natural Resources, Energy and Transport Dept of Technical Co-operation for Development (1980). *State Petroleum Enterprises in Developing Countries*. New York: Published for the United Nations by Pergamon Press. Bentham, R. W., & Smith, W. G. R. (1986). *State Petroleum Corporations: Corporate Forms, Powers and Control* Dundee, Scotland: The Centre for Petroleum and Mineral Law Studies, University of Dundee. Lucas, A. R. (1985). State Petroleum Corporations: the Legal Relationship with the State. *Journal of Natural Resources Law, 3*, 81-101.

[21] Noreng, Ø. (2004). The Norwegian Experience of Economic Diversification in Relation to Petroleum Industry. *OGEL (Oil, Gas and Energy Law Intelligence), 2*(4), 1-17. Al-Kasim, F. (2006). *Managing Petroleum Resources: The 'Norwegian Model' in a board Perspective* Oxford Institute for Energy Studies. Richardson, J. J. (1981). Problems of Controlling Public Sector Agencies: the Case of Norwegian Oil Policy. *Political Studies, 29*(1), 35-50. Barnes, P. (1995). *Indonesia: the Political Economy of Energy*: Oxford University Press. Hayes, D. (2004). Indonesia Faces Energy Investment Challenge. *Petroleum Review, Nov* 36-37. Machmud T. M.(2005). The Indonesian Oil and Gas Industry, Its Evolution and Current State. *Oil, Gas & Energy Law Intelligence, 3*(1). Weightman, R. C. (2006). *Is Indonesia Managing its Oil and Gas Endowment for the Maximum Benefit of its People?* , University of Dundee, Dundee.

[22] Hartley, P., & Medlock III, K. B. (2007). *A Model of the Operation and Development of a National Oil Company*: James A. Baker III Institute for Public Policy, Rice University. Aharoni, Y., & Ascher, W. (1998). Restructuring the Arrangements between Government and State Enterprises in the Oil and Mining Sectors. *Natural Resources Forum, 22*(3), 201-213. p.204

rare, with only a few exceptions.[23]

1.3.3 The difficulty of applying existing studies on the research subject

There are substantial literature on general state owned enterprises (SOEs) and studies of SOEs in other sectors, such as manufacturing, power, and infrastructure. However, due to the distinctive nature of the petroleum sector, mainly, the international character of it and the scale of economic rent it generates, it is difficult to apply these studies to NOCs. It is claimed that "much of the conventional wisdom on national resource exploitation and on state enterprise dynamics does not apply very well to SOEs in the oil and mining sector" and "the distinctiveness of state oil and mining companies is striking and the behaviour of state enterprises in the oil and mining sector is notably different from that of SOEs in the manufacturing, service and infrastructure sector," as these companies "are typically penetrated by government officials in much more complicated way than the activities of other sectors".[24]

Due to the reasons discussed above, the thesis does not undertake a review of the general literature pertaining to SOE reform.

1.4 The research methodology

This thesis employs theoretical and empirical approaches, comprising economic

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[23] Hartley, P., & Medlock III, K. B. (2007). *A Model of the Operation and Development of a National Oil Company*: James A. Baker III Institute for Public Policy, Rice University.

[24] Aharoni, Y., & Ascher, W. (1998). Restructuring the Arrangements between Government and State Enterprises in the Oil and Mining Sectors. *Natural Resources Forum, 22*(3), 201-213.p201-202

analysis, historical analysis and case study. In the theoretical part (chapter 3), the thesis lays the conceptual foundation by reviewing major drivers and measures of NOC reforms through the analysis of major academic literature. It develops the analytical frameworks that will be applied to the case study, concerning NOC reforms in China. The major methodologies employed in this chapter are principal and agent theory ("P-A theory") and document analysis. The document analysis is used to review major reform drivers and measures of NOC reforms. The P-A theory is the major tool used in analysing the relationship between government and NOCs formed by reforms, and evaluating the effectiveness of NOC reforms.[25]

The Principal and Agent theory is selected as the fundamental tool due to the nature of the relationship between government and NOC as a typical principal and agent relationship.[26] The thesis uses the conceptual framework of the theory, which includes the concepts of principal, agent, tasks, incentives, and monitoring and control systems, as well as the relationship between these concepts. It analyses the effectiveness of NOC reforms by evaluating the effectiveness of the principal and agent relationship between government and NOC formed by reforms.

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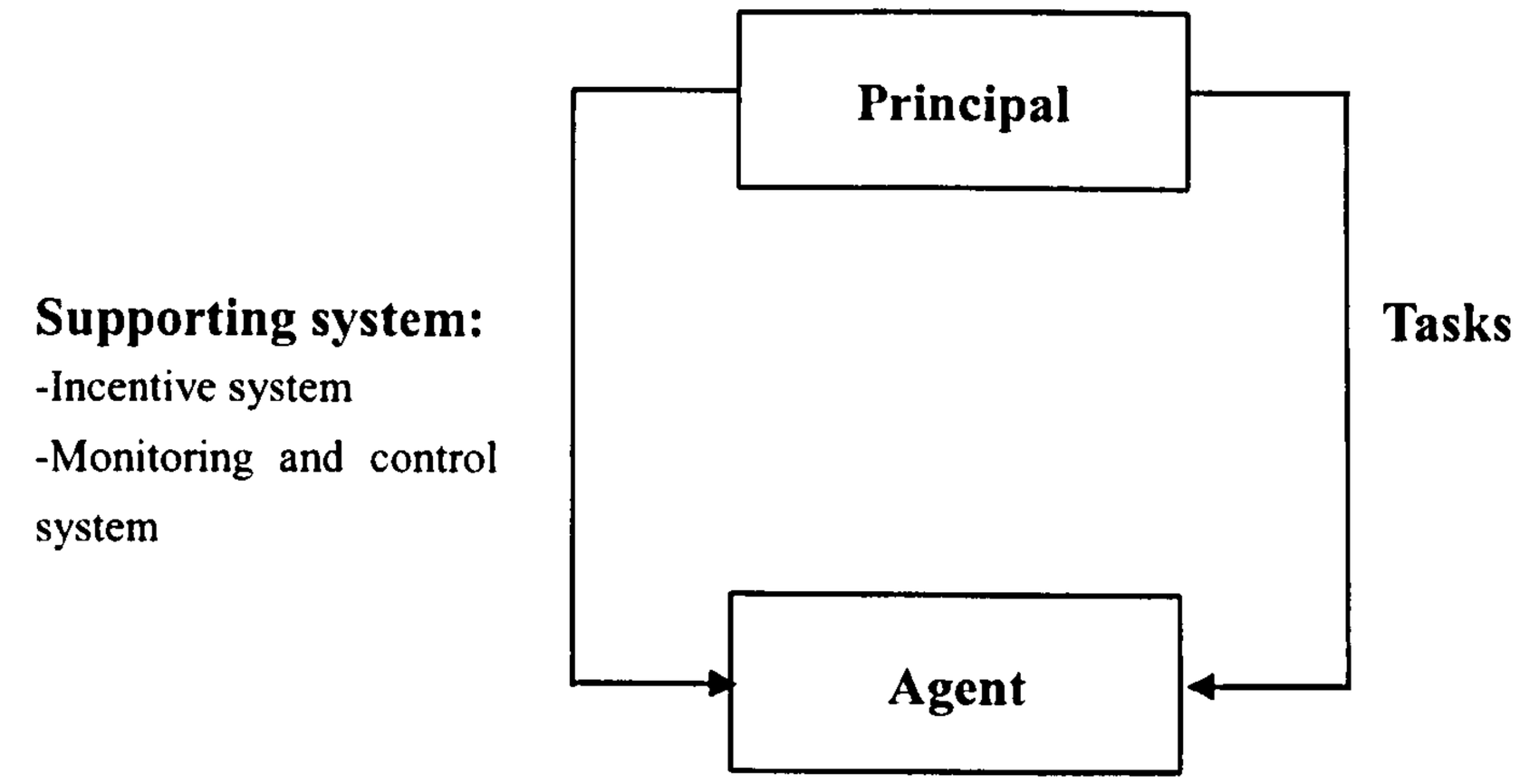
[25] Hartley, P., & Medlock III, K. B. (2007). *A Model of the Operation and Development of a National Oil Company*: James A. Baker III Institute for Public Policy, Rice University.
[26] Hartley, P., & MedlockIII, K. B. (2007). *A Model of the Operation and Development of a National Oil Company*: James A. Baker III Institute for Public Policy, Rice University. p2

Figure 1-1 The use of P-A theory in the thesis



In the empirical part (chapters 4-7), the thesis employs the analytical framework developed in chapter 3 to conduct a three-stage analysis of NOC reforms in China, extending from the year 1949 to 2006.[27] The major methodologies used in this part are P-A theory, case study, historical analysis, document analysis and interviews. For details of the methodology, see chapter 3.

1.5 The analytical framework and structure

In addition to the two introductory chapters (chapter 1 and chapter 2), this study comprises of two main analytical parts, namely the theoretical and the empirical parts.

The theoretical part (chapter 3) analyses the research questions through literature review and document analysis, in order to lay a conceptual foundation for the thesis and to develop the analytical framework for the empirical analysis that follows.

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[27] Through the discussion in this thesis is updated to reflect reforms effected till the end of 2006, certain important reforms effected in 2007 may also be incorporated where necessary and possible.

In this part, the historical evolution of NOCs and the nature of NOCs will be analysed, together with the process of NOC reforms, especially the drivers and measures of reform. For drivers of reform, the thesis examines a wide range of factors including ideological factors and practical factors that drive the reforms of NOCs. For measures of reforms, the thesis looks into components of reforms such as the regulatory framework, the industrial structure, the pricing and distribution system, and the fiscal and financial regimes. This part of the thesis also justifies the way of evaluating the effectiveness of NOC reforms by measuring the effectiveness of the relationship between governments and NOCs by using mainly the Principal and Agent theory. It also develops the analytical framework to evaluate the effectiveness of NOC reform, which will be applied latter in the empirical part of the thesis from chapters 4-7.

The empirical analytical part (chapters 4-7) analyses the research questions through a case study of NOC reforms in China, which covers four distinct historical periods from 1949 to 2006. Each chapter is demarcated to reflect certain stage-setting events and milestones at the national economy or at the petroleum sector level, the creation of NOCs, or the significant changes in the legal statues and scope of functions of the NOCs (see table 1.1). The modern petroleum industry in China is deemed to have begun in the year 1949 with the foundation of the People's Republic of China and hence the period of this case study commences from 1949. This stage is analysed in chapter 4 in order to provide a historical background of the creation of Chinese NOCs and their

reforms. Chapters 5-7 will address NOC reforms within a specific historical period, using the analytical framework developed in chapter 3.

Chinese NOC reforms were chosen for the case study on account of the highly diverse nature of the drivers, the scope and depth of the reform measures carried out in the country during the past five decades.

Table 1-1 The stages of the case study on NOC reforms in China

Stage	Chapter	Year	Major events	Nature of the petroleum sectors
1	4	1949-1978	Beginning of the modern petroleum sector.	Ministry
2	5	1978-1992	Beginning of market-oriented economic reform	Ministry → administrative corporations
3	6	1992-1998	Breakthrough of macro-economic reform with market economy ratified by the constitution	Administrative corporations
4	7	1998-Present	Breakthrough of the reforms of the petroleum sector, with massive scale assets restructuring, privatisation and public listing	Administrative corporation → public listed companies

1.6 The contribution and originality of the thesis

The major contribution of the thesis is that it finds that the regulatory capacity of government together with its social concerns in reforming oil pricing system are two major factors, which set the pace of NOC reform and decide the effectiveness of it. It therefore shows that NOC reform is often a long term process, as the build up of the regulatory capacity takes years or even decades, as demonstrated in the case of China. The thesis also developed a new analytical framework that can be used to study general NOC reforms in countries other than China.

The major originality of the thesis lies in its structured analysis of the NOC reforms as a long lasting process in a historical perspective. The originality also lies in the conduct of a detailed case study with academic interests.

Despite the above major findings which are applicable to NOC reforms in other countries, the single case study has a limitation in terms of application of its more specific findings to countries that are by nature different from China. Additionally, the thesis purposely avoided significant analysis of another dimension of NOCs reforms, namely, those driven by non-laudable political or personal considerations of leading politicians and ruling parties, due to the specific nature of the subject and the different set of theoretical tools required by such an approach.

2 THE METHODOLOGY

As mentioned in section 1.4, the thesis employs theoretical and empirical approaches, comprising economic analysis, historical analysis and case study. The Principal and Agent theory is the fundamental theoretical tool for economic analysis. This chapter will introduce these methodologies employed by the thesis.

2.1 The principal and agent theory

The P-A theory is a fundamental theoretical tool of this thesis. This section comprises two parts: the basic principles of the theory, and the use of the theory in the thesis.

2.1.1 The basic principles of P-A theory

The P-A model addresses the behaviour of principal and agent and the relationships between them. A principal is a party that owns a productive asset and requires another party, an agent, with suitable skills, to manage the asset. The relationship between principal and agent is established when the principal delegates tasks to an agent motivated by the possibility of benefiting from the agent's fulfilling of these tasks, or by the principal's lack of time or ability to perform the tasks themselves. The relationship between principal and agent is usually bonded by contracts and the agent will be rewarded after the fulfilment of the responsibilities required.[28]

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[28] Laffont, J.-J., & Martimort, D. (2002). *The Theory of Incentives: the Principal-Agent Model*. Princeton, N.J.; Oxford: Princeton University Press. p.28

There is an inherent risk for the principal, as agent may not always act in the interest of the principal due to conflicts of interests and asymmetric information, causing the "principal and agent problem".[29] The asymmetric information means that "one party (the agent) in an economic relationship has more information than another party (the principal)".[30] If the agent has private information that is not accessible or is expensive to access by a principal, it is possible for an agent to pursue its own interests at the cost of principal. To better monitor and control the behaviour of an agent, a principal needs to trade off between the cost of information and the benefit gained from the information.[31] Therefore the key issue for the principal is how to establish an appropriate arrangement with appropriate monitoring mechanisms, together with an effective incentive and sanction systems to ensure the maximisation of the performance of the agent and the interest of the principal.[32]

2.1.2 The use of P-A theory in the thesis

This thesis chooses the P-A theory as a major tool for analysing the NOC reforms from the perspective of the relationship between government and NOCs, because the relationship between the government and NOC is a typical principal and agent relationship. The government as the principal assigns tasks to its NOCs. The NOCs as agents are responsible for the tasks and have access to information that may not be

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[29] Laffont, J.-J., & Martimort, D. (2002). *The Theory of Incentives: the Principal-Agent Model*. Princeton, N.J. Oxford: Princeton University Press.p.3. Sloman, J. (2004). *Essentials of Economics* (3rd ed.). Harlow: Financial Times Prentice Hall. p.216

[30] Sloman, J. (2004). *Essentials of Economics* (3rd ed.). Harlow: Financial Times Prentice Hall., p.215, 216

[31] Laffont, J.-J., & Martimort, D. (2002). *The Theory of Incentives: the Principal-Agent Model*. Princeton, N.J.; Oxford: Princeton University Press. p.29

[32] Sloman, J. (2004). *Essentials of Economics* (3rd ed.). Harlow: Financial Times Prentice Hall. p.215-6

accessible or too expensive to be accessible by government. Furthermore, the interests of company bureaucrats, who represent the NOCs, are invariably different from the interest of politicians and civil servants who represent the government. In fact, in many countries, NOCs pursuing their own interest at the cost of the government is one of the major problems of their petroleum sector.[33]

The thesis also assumes that government represents and acts for the best interest of the state, as discussed in section 1.2. This is, though, not always the case in reality. For example, in a country where government has a poor governance record, the state will have difficulty to monitor and control the behaviour of the government and of NOCs, and the government could collude with their NOCs for private political or financial gains at the cost of the state. This could result in poor performance of the NOCs and damage to the interests of the state, the so called phenomena of "the agent without a principal".[34] This thesis will assume that governments represent the interests of their states and therefore purposely avoid significant analysis of NOCs reforms in those countries with extremely poor governance structures, in which policies are mainly driven by non-laudable political or personal considerations of leading politicians and ruling parties. This is mainly because of the specific nature of the subject and the

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[33] Hartley, P., & Medlock III, K. B. (2007). *A Model of the Operation and Development of a National Oil Company*: James A. Baker III Institute for Public Policy, Rice University. p.2. "A firm's history should reflect influence that flow from institutional arrangement with the controlling government". And " the P-A paradigm, which views the owners as principals with the managers making operation decisions as their agents, can be applied to understand the likely consequences of the different ownership structure of NOCs"

[34] Aharoni, Y. (1982). State-Owned Enterprise: An Agent without a Principal. In L. Jones (Ed.), *Public Enterprise in Developing Countries*. Cambridge: Cambridge University Press.

different set of theoretical tools required by such an approach.[35]

This thesis uses the P-A theory for its basic conceptual framework, such as the interaction between principal and agent, tasks assigned by the principal, supporting system such as incentive systems, and monitoring and control systems to ensure the fulfilment of tasks, as discussed in section 1.4.[36] The thesis posits that NOC reforms are mainly caused by changes in the nature and agendas of governments, and that they represent the process of adjustment of the relationship between government and NOCs, including the tasks assigned to NOCs, and the supporting systems including incentive systems and monitoring and control systems used by government to govern NOCs in order to ensure the fulfilment of these tasks.

The theory is also the major tools used in addressing the research question by evaluating the effectiveness of NOC reforms. Traditional studies seek to evaluate the effectiveness of NOC reforms by measuring the performance of NOCs using quantitative data, such as the financial data and operational data.[37] However, this thesis chooses to evaluate the

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[35] Karl, T. L. (1997). *The Paradox of Plenty : Oil Booms and Petro-states*. Berkeley ; London: University of California Press. Eifert, B., Gelb, A., & Tallroth, N. B. (2003). The Political Economy of Fiscal Policy and Economic Management in Oil-Exporting Countries. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 82-122). Washington D.C.: International Monetary Fund. NOC reforms in these counties should therefore focus on the enhancement of the governance of their government or ruling parties. The theoretical tools for these countries are mainly political science or political economics. This thesis therefore is focused on countries with modest or good governance records but weak national capacity.

[36] Aharoni, Y., & Ascher, W. (1998). Restructuring the Arrangements between Government and State Enterprises in the Oil and Mining Sectors. *Natural Resources Forum, 22*(3), 201-213. p.203

[37] Wolf, C., & Pollitt, M. G. (2008). *Privatising National Oil Companies: Assessing the Impact on Firm Performance* (No. EPRG 0805 and CWPE 0811): Judge Business School, University of Cambridge. Victor, N. M. (2007). *On Measuring the Performance of National Oil Companies (NOCs)*: Program on Energy and Sustainable Development, Freeman Spogli Institute for International Studies, Stanford University, Stanford.

effectiveness of NOC reforms by exploring qualitatively the effectiveness of the relationship between government and NOCs established by reforms. This approach is selected for two reasons. First, there is a lack of consistent and good quality quantitative data to measure NOCs' commercial and financial performance, as discussed in chapter 1. Second, most NOCs take not only commercial responsibilities but also non-commercial responsibilities, which makes it a daunting task to measure quantitatively the performance of NOCs due to the difficulty of measuring the value added by NOCs' non-commercial activities.

A framework based on the P-A theory is also used in the China case study to examine the effectiveness of reforms. For each reform stage, the thesis will examine the measures of reforms, comprising regulatory framework, industrial structure, pricing system and distribution system, fiscal regime and financial system. The P-A relationship between government and NOCs established by the reforms will also be examined, including the tasks assigned by the government during the stage, and the supporting system comprising the incentive system, and monitoring and control system to support the tasks. The effectiveness of the relationship will also be analysed in each stage to evaluate the effectiveness of reforms.

There exists a wide range of other theories and schools of thought, including incentive

theory, public choice theory, organisational theory and public management theory[38] that could have been employed in place of P-A theory. However, a closer study reveals that the P-A theory is the basis of many relevant theories and schools of thought mentioned above. Furthermore, the P-A theory is fundamental, flexible and easier to employ in analysing the research subject. Hence, the thesis uses the P-A theory.

2.2 Document analysis

Document analysis is a method of collecting raw data for research and is defined as the "collection, review, interrogation, and analysis of various forms of text as a primary source of research data".[39] This method is thus different from literature review which is a critical review of literature to show what prior work exists on the research subject and what new contributions the present research can make. The thesis does not have a separate literature review section, mainly due to the wide scope of the research subject covered by the thesis.

In this thesis, the method of document analysis is mainly used in the theoretical analysis in chapter 3 and the empirical analysis of the case study in chapters 4-7. In the

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[38] Laffont, J.-J., & Martimort, D. (2002). *The Theory of Incentives: the Principal-Agent Model*. Princeton, N.J.; Oxford: Princeton University Press. p.3. Thompson, F. (1998). Public Economics and Public Administration. 2nd edition In J. Rabin, W. B. Hildreth & G. J. Miller. (Eds.), *Handbook of public administration* (pp. 995-1064). New York: Marcel Dekker. Solomon, J. and Solomon, A. (2004), 'Corporate Governance and Accountability', John Wiley and Sons, Ltd. p.17. Lane, J.-E. (2000). *New Public Management*. London: Routledge. p.5. http://site.ebrary.com/lib/dundee/Doc?id=10054251&ppg=18. Stretton, H., & Orchard, L. (1994). *Public goods, public enterprise, public choice: theoretical foundations of the contemporary attack on government*: Basingstoke: Macmillan. Felkins, L. (2001). Introduction to Public Choice Theory. Retrieved 2 Apr., 2005, from http://www.magnolia.net/~leonf/sd/pub-choice.html

[39] O'Leary, Z. (2004). *Essential Guide to Doing Research*. London: SAGE. p.177

theoretical part, this method is used to analyse the NOCs' history, drivers of reforms and measures of reforms. The main source of documents used in this thesis includes academic literature, laws and regulations, government official documents, reports from think tanks and research institutes, conference proceedings, media coverage, and information provided by NOCs, on websites and in annual reports.

The document analysis method is also used in the case study to analyse the drivers, major measures and the outcome of reforms. The major documents used in this part are academic literature, historical studies on the Chinese petroleum sector, annual reports, internal reports, yearbooks and IPO prospectus of Chinese NOCs.

2.3 Case study

2.3.1 Why a case study?

The main approach used by this research is the case study approach, which is defined as "a method of studying elements of the society through comprehensive description and analysis of a single situation or case, for example, a detailed study of an individual, group, episode, event, or any other unit of social life organization. Emphasis is often placed on understanding the unity and wholeness of a particular case".[40] For each case selected, several methods of data collection will be chosen according to the nature of the research question and the nature of the cases selected. Frequently used methods of data

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[40] O'Leary, Z. (2004). *Essential Guide to Doing Research*. London: SAGE. p.115

gathering include interviews, document analysis and observation.[41]

Case study is a widely used approach in academic research, especially social and policy science studies because of the two strengths of the method which are all applicable to this study.

Firstly, a case study approach makes a piece of research, such as the present one, achievable which otherwise might have been difficult.[42] NOC reform is usually a long and slow process, which covers a wide range of measures and is highly influenced by cultural, social, economic, political settings and historical events in a country during relevant periods. Thus, it is extremely difficult for a single study to cover all instances of reforms of the diverse types of NOCs.

Secondly, a case study approach is characterised by in-depth research of a particular case, which enables an "authentic" and "rich" understanding in a piece of research.[43] This attribute is especially suitable for the study of a multi-dimensional social phenomenon where the complexity arises under the joint influence of cultural, historical, psychological, political and social factors, as is the case in NOC reforms, and suits a wide spectrum of disciplines such as public policy, economics, and political science.

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[41] Somekh, B., & Lewin, C. (2005). *Research Methods in the Social Sciences*. London ; Thousand Oaks, Calif.: SAGE Publications.p.35

[42] O'Leary, Z. (2004). *Essential Guide to Doing Research*. London: SAGE.p.116.

[43] O'Leary, Z. (2004). *Essential Guide to Doing Research*. London: SAGE.p.116. Somekh, B., & Lewin, C. (2005). *Research Methods in the Social Sciences*. London; Thousand Oaks, Calif.: SAGE Publications.p.33

Thus, case study approach is apt for this study and a theoretical study would not suffice to address the research questions herein.

2.3.2 The selection of the China case

The case of NOC reforms in China is chosen due to its importance to the international petroleum sector, the special transformation paths of the Chinese NOCs in a special economic and political context, the lack of in-depth research on this subject, and the availability of information with the author,.

First of all, China and its NOCs have become increasingly important players in the international petroleum scene due to the country's fast growing need for petroleum to fuel its economic growth. Its oil consumption more than doubled in the period between 1995 and 2005 from 3.7 to 6.9 million ("mn") barrels per day ("bbl/d").[44] Some commentators argue that the strong demand from China was one of the main factors responsible for the surging international oil price at that time, as China accounted for 33% of the increase in world oil and 71% of that of the Asia Pacific from 2000 to 2005.[45] According to the World Energy Outlook 2006 by International Energy Agency ("IEA"), China's crude import will grow to 12 mn bbl/d by 2030, four times the existing 3 mn bbl/d.[46] Forecasts of Chinese oil demand and supply is shown in table 1.1.

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[44] Calculated according to data from BP. (2006). BP Statistical Review of World Energy 2006. Retrieved 21 Jan 2007, from http://www.bp.com/productlanding.do?categoryId=6842&contentId=7021390

[45] Ibid

[46] Interfax. (2007). China to Triple Crude Imports by 2030-IEA. *Interfax-China energy report weekly, VI*(4), 8. 12 mn bbl/d equal to about 589.7 mn ton per year, and 3 mn bbl/d equal to about 147.4 mn ton per year (calculation is based on the conversion factor of the Daqing oil, a ton of which equal to 7.428 barrel)

Table 2-1 China Oil Demand and Supply Projections

(ml tonnes per year)[47]

	2010	2015	2020	2025	2030
Demand Projections					
IEA (2004)	375		503		636
EIA(2006a)	450	540	660	780	920
China Energy Development Report (2003)	310	350	400		
Supply Projections					
IEA (2004)	168		137		112
EIA(2006a)	172	167	162	162	167
China Energy Development Report (2003)	170-190	180-200	170-190		

Second, China is selected because of the scope of the transformation of the country's petroleum sector, as well as the reform measures taken by the government in the selected period. The country has remained a major oil producer in the world since the late 1960s, while it had been transformed since then from being a net exporter into a net importer since 1990s. The country's experience of conducting both supply and demand side regulation may provide insights for both petroleum producing and consuming countries around the world. Furthermore, the country's petroleum sector has experienced extensive transformation from being a highly centralised planning entity into a relatively autonomous corporation operating in largely liberalised market domestically and internationally. The wide scope of the transformation is also valuable in guiding other countries in commercialising and liberalising their petroleum sector.

Third, China is selected also because of the unique social, political, economic and

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[47] Oliver, H. H. (2006). Reducing China's Thirst for Foreign Oil: Moving Towards a Less Oil-Dependent Road Transport System *China Environment Series 2006 (Woodrow Wilson International Centre for Scholars)*, 41-58. p.42

cultural settings of its petroleum sector. The scope and extent of transformation in its petroleum sector was significant. During the period from 1949 till 2006, the country's economy was transformed from a strict central planning model to a market economy "with Chinese characteristics". Influenced by its socialist past, the NOC reforms in the country and the policy choices of the government are different from other countries.[48] Its petroleum sector began as a Soviet styled Ministry with both administrative and operational functions since the 1950s. It experienced decades of evolution to achieve the existing format of several largely commercialised NOCs with few non-commercial responsibilities.[49]

Fourth, there are few detailed studies completed on the subject by scholars outside China, partially because of little transparency in the Chinese petroleum sector in the past and partially due to the self-sufficient nature of the country's petroleum production and consumption before 1990s, which made the country's petroleum sector of less interest to the outside world. Limited studies on the subject include a study by Lieberthal and Oksenberg on the policy making process in China in terms of its petroleum sector from 1949 to early 1980s.[50] Zhang analysed the evolution of business models, corporate structure, and the role of the headquarters of Chinese NOCs, and the impacts on their

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[48] Walde, T. T., & Hirschhausen, C. V. (1998). *Regulation Reform in the Energy Industry of Post-Soviet Countries* Dundee: Centre for Energy, Petroleum and Mineral Law and Policy. p.4

[49] Ibid

[50] Lieberthal, K., & Oksenberg, M. (1988). *Policy making in China : leaders, structures and processes* Princeton, N.J.: Princeton University Press.

competitiveness.[51] Kambara and Howe's study analyses China's energy challenges and covers the development of China's energy sector with their emphasis being on resource endowments, as well as on exploration, production and refinery activities.[52] A few other recent studies were carried out by Lewis and by Guo on the Chinese NOCs' impacts on the world energy markets and the current business model of these NOCs.[53] Ma and Andrews-Speed explored the rationales and outlook of Chinese NOCs' overseas activities.[54] The above studies either focus mainly on the international impacts of Chinese NOCs' behaviour or on the business model of Chinese NOCs or petroleum policies of China over a limited period of time.

Lastly, the author worked in the Chinese oil sector for four years before undertaking this study, and thus has the advantage of a deep understanding of the sector and access to people in the industry as well as relevant data. This is also the main reason why the study uses the example of CNPC/PetroChina in discussing the internal reforms in the Chinese NOCs.

2.4 Historical analysis

Another main methodology of the thesis is historical analysis, used in the study of

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[51] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon.

[52] Kambara, T., & Howe, C. (2007). China and the global energy crisis: development and prospects for China's oil and natural gas. Cheltenham, Glos, UK ; Northampton, MA: Edward Elgar.

[53] Lewis, S. W. (2007). *Chinese NOCs and World Energy Markets: CNPC, Sinopec and CNOOC*: James A. Baker III Institute for Public Policy, Rice University.

[54] Ma, X., & Andrews-Speed, P. (2006). The Overseas Activities of China's National Oil Companies: Rationale and Outlook. *Minerals and Energy 21*(1), 1-14.

Chinese NOC reforms. The historical analysis is widely used in studies addressing comprehensive social, political and economic issues which involve choices by human beings. New institutional economics argues that history is critically important because most social, political and economic development is influenced and restricted by existing institutional structure which is normally a product of past choices. Therefore, "history matters. It matters not just because we can learn from the past, but because the present and the future are connected to the past by the continuity of a society's institutions. Today's and tomorrow's choices are shaped by the past. And the past can only be made intelligible as a story of institutional evolution. Integrating institutions into economic theory and economic history is an essential step in improving that theory and history."[55]

This is especially true for NOC reforms.[56] The special characteristic of the petroleum sector is the long time span between commencement of exploration expenditure and its results in terms of finding oil or gas.[57] This is also the case of NOC reforms. Different from mainstream studies which view NOC reforms as a one-off action, the thesis posits NOC reforms as a long term process. During each stage of reform, the government and NOCs have to make their decisions based on the existing institutional framework, which itself has been influenced by previous decisions. The reform measures and the new institutional framework formed will also be constrained by events and decisions in

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[55] North, D. C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press. Vii p.3

[56] Hartley, P., & Medlock III, K. B. (2007). *A Model of the Operation and Development of a National Oil Company*: James A. Baker III Institute for Public Policy, Rice University. p.2

[57] Gallun, R. A., Wright, C. J., Nichols, L. M., & Stevenson, J. W. (2001). *Fundamentals of Oil and Gas Accounting* (4th ed.): PennWell. p.606

previous stages. This thesis thus views reform of NOCs as a continuous process that should be seen in a long-term perspective rather than a static or a one-off phenomena.[58] In the case study on Chinese NOC reforms, four stages spanning over five decades are analysed in chapters 4-7, respectively.

2.5 Unstructured interview

The interview approach is a widely employed method and is defined as "a method of data collection that involves researchers asking open-ended questions" to respondents.[59] Communicating with real people and exploring the "reality" concerning the research questions lie at the centre of the interview approach.[60] NOCs as a group publish less information as compared to private companies. An interview with stakeholders in NOC reforms could reveal additional useful information to supplement available documents on the subject, especially because official literature on the same may not reflect the true motives of policy makers. Thus, the interview approach can help explore the stories behind media coverage.

There are three types of interview approaches depending on their forms including the structured interview, the semi-structured interview and the unstructured interview.[61] This thesis employs the unstructured interview approach to add insights on the drivers and

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[58] Fossum, J. E. (1997). *Oil, the State, and Federalism*: University of Toronto Press, Toronto Buffalo London. p.5

[59] O'Leary, Z. (2004). *Essential Guide to Doing Research*. London: SAGE.p.118. Somekh, B., & Lewin, C. (2005).*Research Methods in the Social Sciences*. London;Thousand Oaks, Calif.: SAGE Publications.p.172

[60] Somekh, B., & Lewin, C. (2005). *Research Methods in the Social Sciences*. London ; Thousand Oaks, Calif.: SAGE Publications. p.42

[61] Bryman, A., & Bell, E. (2003). *Business Research Methods*. Oxford: Oxford University Press. p.340

decision making process on NOC reforms, especially for those lacking documented records. The target group of interview for this thesis includes government officials, and senior and middle managers of NOCs. The study covered interviews of officials from the Chinese Ministry of Finance, Ministry of Land and Resources, and the National Development and Reform Commission. It also covered interviews of senior officers of the former Ministry of Petroleum Industry, as well as middle management from the CNPC and PetroChina.

3 LAYING THE CONCEPTUAL FOUNDATION

The aim of this chapter is to lay the conceptual foundation for the thesis by analysing several core conceptual issues relating to the research area, and by developing an analytical framework to address the research question. This chapter starts with an analysis of the historical evolution of NOC. It is followed by an examination of the fundamental nature of NOCs and their relationship with governments, in comparison to that of IOCs. Thereafter, the major drivers, measures and the effectiveness of NOC reforms are analysed with emphasis being placed on the analysis of the changes of the relationship between governments and NOCs and on the effectiveness of that relationship. This chapter concludes by developing the new analytical framework for analysing the effectiveness of NOC reforms, which will be used in the China case study.

3.1 The historical evolution of NOCs

This section analyses the evolution of NOCs in order to provide an historical background to the origin of NOCs, and the evolution of their relationship with governments. Four different stages will be analysed: the stage prior to 1960s, the stage during 1960s and 1970s, the stage during 1980s and 1990s, and the stage since the year 2000.

3.1.1 The early stage (before 1960s)

Before 1960s, there were few NOCs around the world and NOCs as a group played only a marginal role in the international petroleum sector.

During this stage, the international petroleum sector was under the control of seven large IOCs known as "seven sisters". 70% of the oil reserves of the entire world were controlled by these companies.[62] Most of the international oil trade was conducted by these companies in the form of internal transactions or inter-company transactions. They also controlled international oil pricing through a posted price system under which prices of crude oil did not reflect the supply and demand of petroleum, but rather a fiscal parameter to calculate the share of government take.[63]

Major oil consuming countries, most of them home countries of the seven sisters, were in a favourable position, enjoying the prosperity caused by low and stable oil price.

Oil producing countries, mainly Middle East countries and Venezuela, were in a weak position during this stage. Their reserves were assigned to IOCs through a concession system with strong colonialist characteristics, hugely favouring IOCs.[64] They had little influence over the price level and did not benefit economically as oil prices remained extremely low. They lacked capital, infrastructure, technology and expertise, and the

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[62] Linde, C. V. D. (2000). The State and the International Oil Market: Competition and the Changing Ownership of Crude Oil Assets: Kluwer Academic Publishers. p.98

[63] Fattouh, B., & Oxford Institute for Energy, S. (2007). *OPEC Pricing Power: the Need for a New Perspective*. Oxford: Oxford Institute for Energy Studies.

[64] Parra, F. (2005). *Oil Politics: A Modern History of Petroleum*. London.New York: I.B.Tauris. p.1-3. Bunter, M. A. G. (2002). *The Promotion and Licensing on Petroleum Prospective Acreage*: Kluwer Law International. p.1 "'The concession system was originated from Anglo-Saxon concept of ownerships of mineral wealth. According to the system, host government sigh contract with IOCs. Through the contract governments grants companies the right to explore for, develop, produce, transport, and market hydrocarbons or minerals within a fixed area for a specific amount of time. The concession and production and sale of hydrocarbons from the concession are then subject to rentals, royalties, bonuses, and taxes."

situation was unlikely to change under the system as the operation of IOCs was isolated from the rest of the domestic economy with few local staff employed and local capacities promoted.[65]

During this stage only a few NOCs came into being. Some of them had their country specific agenda. For example the Yacimientos Petroliferos Fiscales ("YPF") of Argentina was created in 1920 in order to achieve "self sufficiency and exclusive access to a strategic energy resource".[66] There also existed fully state owned petroleum enterprises in centralised command and socialist countries such as Russia, China and India. Others were more or less pioneers of later NOCs as a result of developing countries' attempts to secure better economic benefits for themselves. Examples include Petróleos Mexicanos ("Pemex") of Mexico established in 1938 and NIOC of Iran established in 1951.[67] Despite the small number of NOCs existing at this stage, pressure had accumulated for developing countries to change the order of the international petroleum sector.

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[65] Bunter, M. A. G. (2002). *The Promotion and Licensing on Petroleum Prospective Acreage*: Kluwer Law International. p.156, p.44

[66] Khelil, C. (1995). *Argentina, Hydrocarbon Sector Privatisation*. Dundee: Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee.

[67] McPherson, C. (2003). National Oil Companies: Evolution, Issues, Outlook. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 184-204). Washington D.C.: International Monetary Fund. p.185. Marcel, V., & Mitchell, J. V. (2006). *Oil Titans: National Oil Companies in the Middle East*. London and Washington, D.C.: Chatham House and Brookings Institution Press. p.15. Philip, G. (1997). *State Oil Companies and the Reversal of National Developmentalism: the Case of Mexico and Venezuela*. Dundee: Centre for Petroleum and Mineral Law and Policy, University of Dundee. p.3. Trauber, S. (2007). The Rising Influence of the NOC: The Financial Community Perspective Baker Institute Policy Report No. 35. p.4

3.1.2 The establishment of NOCs in large scales (1960s-1970s)

The establishment of NOCs peaked during the period from 1960s to 1970s in both developing and developed countries, and NOCs started to play an increasingly important role in the international oil industry.

Driven by the unsatisfactory relationship between the Seven Sisters and oil producing countries, and by the new international economic order emerging in the United Nations ("UN"), which sought to assert the "permanent, inalienable sovereign powers of countries over their natural resources" from 1958 to 1974, developing oil producing countries started to seek a better framework for the international petroleum sector.[68] First of all, the Organisation of Petroleum Exporting Countries ("OPEC") was established as a cartel of oil producing countries to counter the power of IOCs by maintaining oil prices through quota management in the 1960s.[69] Secondly, many oil producing countries stopped granting concessions to IOCs. New types of fiscal systems, such as Production Sharing Agreements ("PSA") were widely adopted, which enhanced the exercise of sovereign power of host governments over their resources possibly with

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[68] Bunter, M. A. G. (2002). The Promotion and Licensing on Petroleum Prospective Acreage: Kluwer Law International. p.1

[69] OPEC. (2008). The History of OPEC Retrieved 4th April, 2008, from http://www.opec.org/aboutus/history/history.htm. The Organization of the Petroleum Exporting Countries (OPEC) is a permanent, intergovernmental Organization, created at the Baghdad Conference on September 10–14, 1960, by Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. The five Founding Members were later joined by nine other Members: Qatar (1961); Indonesia (1962); Socialist Peoples Libyan Arab Jamahiriya (1962); United Arab Emirates (1967); Algeria (1969); Nigeria (1971); Ecuador (1973–1992); Gabon (1975–1994) and Angola (2007). OPEC had its headquarters in Geneva, Switzerland, in the first five years of its existence. This was moved to Vienna, Austria, on September 1, 1965.

higher shares of return.[70] Oil producing countries also sought to increase their pricing power and argued for new price systems.

Although some oil producing countries such as Saudi Arabia allowed IOCs to stay, others felt that "only nationalisation of the concessions and assets of IOCs would benefit the economic interest of oil producing countries".[71] Due to the lack of a well developed domestic private sector to fill in the gap, a large number of NOCs were established during this stage through nationalisation of assets held by IOCs.[72] Newly established NOCs included Iraq National Oil Company ("INOC") of Iraq (1966) Sonatrach of Algeria (1963), National Oil Company Libya ("NOCL") of Libya (1970), Petronas of Malaysia (1974), PdVSA of Venezuela (1975), Kuwait National Petroleum Corporation ("KNPC") of Kuwait (1975), Nigeria National Petroleum Corporation ("NNPC") of Nigeria (1977), and Saudi Aramco of Saudi Arabia (1980).[73]

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[70] For more information on PSA, see Johnston, D. (1994). *International Petroleum Fiscal Systems and Production Sharing Contracts*. Tulsa, Oklahoma: Pennwell Publishing Company. Bunter, M. A. G. The Promotion and Licensing on Petroleum Prospective Acreage (Vol. 2002): Kluwer Law International. p.1. Fattouh, B., & Oxford Institute for Energy, S. (2007). *OPEC Pricing Power: the Need for a New Perspective*. Oxford: Oxford Institute for Energy Studies.

[71] Linde, C. V. D. (2000). *The State and the International Oil Market: Competition and the Changing Ownership of Crude Oil Assets*: Kluwer Academic Publishers. p.97

[72] McPherson, C. (2003). National Oil Companies: Evolution, Issues, Outlook. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 184-204). Washington D.C.: International Monetary Fund. p.185

[73] Thompson, E. V. *A Brief History Of Major Oil Companies in The Gulf Region* Petroleum Archives Project, Arabian Peninsula & Gulf Studies Program, University of Virginia and The Kuwait Foundation for the Advancement of Sciences. Trauber, S. (2007). The Rising Influence of the NOC: The Financial Community Perspective Baker Institute Policy Report No. 35. p.4. The History of National Oil Company Libya. Retrieved 9th Jan, 2008, from http://en.noclibya.com.ly/. The History of Petronas Retrieved 9th Jan, 2008, from http://www.petronas.com.my/internet/corp/centralrep.2.nsf/frameset_corp?OpenFrameset. The History of NNPC. Retrieved 9th Jan, 2008, from http://www.nnpcgroup.com/. The History of PDVSA. Retrieved 9th Jan, 2008, from http://www.pdvsa.com/

NOCs were also established in the developed world in response to the changing international petroleum order although for different reasons. The end of an era of cheap and stable oil supply caused increased security of supply concerns. There was also a prevailing ideology that governments should and could intervene in the national economy.[74] British National Oil Company established in 1976 is an example of this.[75] Some developed countries established NOCs for the purpose of fostering national capacity, as in the case of Statoil of Norway (1972).[76]

By the end of this stage, NOCs had become vital players in the international petroleum sector, controlling majority of world oil reserves through renegotiation, nationalisation and the application of new fiscal regimes. Through them governments, especially OPEC members, could have a better control over oil pricing system and access to increased revenue.[77] Many of them also took the responsibility of assisting national economic development and played an important role in resource management. The relationship between government and NOCs was closer and the government normally controlled the core decision making of their NOCs.

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[74] Stevens, P. (2008). Oil Wars: Resource Nationalism and the Middle East. In P. Andrews-Speed (Ed.), *International Competition for Resources: the Role of Law, the State and of Market* Dundee: Dundee University Press.

[75] Helm, D. (2004). *Energy, the State, and the Market : British Energy Policy since 1979* (Rev. ed.). Oxford: Oxford University Press. p.14

[76] Fossum, J. E. (1997). *Oil, the State, and Federalism*: University of Toronto Press, Toronto Buffalo London. Al-Kasim, F. (2006). *Managing Petroleum Resources: The 'Norwegian Model' in a board Perspective* Oxford Institute for Energy Studies. p.46. The History of Statoil and Hydro. Retrieved 9th Jan, 2008, from http://www.statoilhydro.com/en/AboutStatoilHydro/History/AboveAndBelow/Pages/default.aspx

[77] Fattouh, B., & Oxford Institute for Energy, S. (2007). *OPEC Pricing Power: the Need for a New Perspective*. P.4 Oxford: Oxford Institute for Energy Studies. p.4

3.1.3 The commercialisation of NOCs during (1980s -1990s)

During the stage between 1980s and 1990s, the international petroleum sector was further developed. A short application of a netback price resulted in the collapse of the OPEC-administrative fixed price system and the beginning of the international petroleum price system.[78] A low oil price level prevailed throughout the stage as more supply from regions such as North Sea, the Gulf of Mexico, Former Soviet Union ("FSU") and West Africa came to the market. An initial attempt by OPEC to defend the OPEC-administrative price system resulted in significant reduction of market share of the Cartel.[79]

Low price and reduced revenue income of oil producing countries turned out to be a severe challenge for their governments. Meanwhile, the performance of many NOCs was disappointing,[80] in as much as their costs were high, their investment generated poor returns, rent-seeking and corruption were rampant, and their financial situation was

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[78] Al-Moneef, M. A. (1998). International Downstream Integration of National Oil Companies. In P. Stevens (Ed.), *Strategic Positioning in the Oil Industry* (pp. 45-60): The Emirates Centre for Strategic Studies and Research. p.46. Fattouh, B., & Oxford Institute for Energy, S. (2007). *OPEC Pricing Power: the Need for a New Perspective*. p.5. "The netback pricing system provided oil companies with a guaranteed refining margin since it was based on a general formula in which the price of crude oil was set equal to the *ex post* product realization minus refining and transport costs. The system resulted in the 1986 price collapse, from $26 per barrel in 1985 to less than $10 per barrel in mid-1986. Out of the 1986 crisis, the current "market-related" oil-pricing regime was born. The adoption of the current market-related pricing system represented a new chapter in the history of oil price determination since it resulted in the abandonment of the administered oil pricing system that had dominated the oil market from the 1950s until the mid-1980s."

[79] Fattouh, B., & Oxford Institute for Energy, S. (2007). *OPEC Pricing Power: the Need for a New Perspective*. p.4. "Between 1975 and 1985 non-OPEC countries increased their share of world total oil production from 48% to 71% with most of the increase coming from Mexico, the North Sea and the Soviet Union. OPEC's market share in the world's oil production fall from 52% in 1973 to less than 30% in 1985 with Saudi Arabia's share being the most affected."

[80] Aharoni, Y., & Ascher, W. (1998). Restructuring the Arrangements between Government and State Enterprises in the Oil and Mining Sectors. *Natural Resources Forum, 22*(3), 201-213. Stevens, P. (1998). Energy Privatisation: Sensitivities and Realities. *Journal of Energy and Development, 23*(1), 1-14.p1

extremely tight. Also, many NOCs, having accumulated significant power, sought to grow out of the government control to become a state within a state, therefore causing severe political unrest.[81]

Severe economic challenges and changes in economic ideologies drove governments to reform their NOCs.[82] The old school of economic theory arguing for direct state intervention in the economy was challenged by the failure of the FSU and was gradually substituted by new economic ideologies which argued for free market reforms with the support of the International Monetary Fund ("IMF"), the World Bank and the Chicago school (lead by influential economists such as Milton Friedman), representing the so called "Washington consensuses".[83] In developed countries it was believed that "the job of government should be limited to the setting framework, within which the scope of market forces would be maximised'.[84]

In developing countries, the 1990s financial debt crisis and the need for international support made it possible for the World Bank and IMF to spread its ideology in these countries. Thus, privatisation, deregulation and liberalisation became a major theme of

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[81] Barnes, P. (1995). *Indonesia: the Political Economy of Energy*: Oxford University Press

[82] CEE. (2007). *Commercial Frameworks for National Oil Companies*: Centre for Energy Economics, Bureau of Economic Geology, Jackson School of Geosciences, the University of Texas at Austin

[83] Stevens, P. (1998). Strategic Positioning in the Oil Industry: Trends and Options. In P. Stevens (Ed.), *Strategic Positioning in the Oil Industry* (pp. 1-22): The Emirates Centre for Strategic Studies and Research. p.13

[84] Helm, D. (2004). *Energy, the State, and the Market : British Energy Policy since 1979* (Rev. ed.). Oxford: Oxford University Press. p.14

economic reforms in both developed and developing countries.[85] Meanwhile, in oil consuming countries, security of supply became less of a concern as cheap and abundant supply of oil in a better developed international petroleum market promoted the notion that oil was not a strategically important commodity any more but a commodity that could be easily accessed through the market.

During this stage, large scale market driven reforms characterised by commercialisation and liberalisation were conducted in the petroleum sector. In Norway, the Norwegian government removed from Statoil the automatic access to 51% resources and the veto right, partially because the company had run into severe cost overruns in 1980s. The Indonesian government started to reform Pertamina as it ran into financial crisis caused by inappropriate investment. Privatisation of NOCs occurred in UK, Russia and Argentina, when the NOC of the former two were privatised under Thatcher's and Yeltsin's regime, respectively, whereas Argentina privatised most of its economy under the aid of the World Bank during its foreign debt crisis.[86] Liberalisation of Petrobras in 1997 took place in an environment where a liberal government took power and liberalised the economy on a massive scale. In China, the market oriented economic reforms significantly impacted the role of NOCs and they were normally selected to test pilot schemes to reform State Owned Enterprises ("SOEs"). Even in countries where privatisation was too sensitive to be accepted due to ideological and national reasons,

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[85] McPherson, C. (2003). National Oil Companies: Evolution, Issues, Outlook. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 184-204). Washington D.C.: International Monetary Fund. p.186

[86] Economist. (2007). After Yukos. *The Economist 383*(8528), 71-72.

such as those in the Middle East, actions were taken to reduce the governments' influence on commercial operations of NOCs to make them commercially more efficient.[87]

As a result, the scope of NOCs' non-commercial responsibilities was largely reduced, and governments increasingly favoured market-driven means in regulating their NOCs and hence empowered them with greater autonomy.

3.1.4 A mixture of re-nationalisation and commercialisation of NOCs (since 2000)

Entering the 21st century, the international oil market was increasingly exposed to two sets of conflicting forces influenced by the establishment of a formula-based pricing system and continuous high oil prices.

During the early years of the 21st century the international petroleum market was further developed, market volumes were further expanded and a market-driven formula pricing system was established as the major oil pricing mechanism, in which "oil was initially priced off the spot market until the futures market assumed a greater role in price discovery".[88] A wide range of factors such as demand, supply, speculations and expectations of players in the futures market jointly impacts oil price level. As a result, a good understanding of the market mechanism and a flexible commercially driven

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[87] *Oxford Analytica Brief* (2002). Middle East: Oil Company Reform. *Oxford Analytica Brief June, 3.*

[88] Fattouh, B., & Oxford Institute for Energy, S. (2007). *OPEC Pricing Power: the Need for a New Perspective*. p.4

business model became important for NOCs of producing as well as consuming countries, to maximise their national as well as commercial interests. This together with adoption of market ideology and globalisation in many countries served as major drivers for NOCs to be further commercialised and pricing system being liberalised.

During this stage, the international oil prices remained at a record high level, which had mixed impacts on NOCs reforms in producing countries. On the one hand, cash rich NOCs had greater access to advanced technology, qualified skills, and training schemes and were more able to enhance their commercial performance. On the other hand, high oil prices brought back the ideology of resource nationalism.[89] Although in many countries efforts were made to increase only the government take from resources activities, in many other countries these efforts were coupled by an increasing presence of state in the petroleum sector. This was because higher rent made NOCs more attractive to be controlled. This was especially so in countries that still had a populist and socialist influence or had a large proportion of poor people who supported nationalism and socialism ideologies.[90] Additionally, the high oil price increased the rent generated from the petroleum sector and covered up financial deficiencies resulting from the poor performance of NOCs, thereby delaying the commercialisation and liberalisation effort initiated in many countries.

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[89] Trauber, S. (2007). The Rising Influence of the NOC: The Financial Community Perspective Baker Institute Policy Report No. 35. p.1

[90] The recent difficulties facing by the Mexico government in reforming Pemex could demonstrate this.

High price levels also had mixed impacts on oil consuming countries. One the one hand, it triggered higher security of supply concerns and drove oil consuming countries, especially those lacking experience in dealing with international petroleum market, to increase the role of government in securing supply. This may have slowed down reforms of NOCs to a large extent. The most notable examples in this category are China and India. The NOCs in these countries are required to take a greater responsibility for ensuring security of supply by cooperating with NOCs in resource rich countries and by expanding their foothold overseas.[91] On the other hand, high oil prices have placed a greater financial burden on governments subsidising their domestic oil prices, and have pressed them hard to liberalise their domestic oil pricing systems.

3.2 The fundamental nature of NOCs and their relationship with their governments

The aim of this section is to examine the fundamental nature of NOCs and their relationship with their governments. It highlights the special nature and agenda of government, and the different relationship it formed with NOCs, which differentiate NOCs from IOCs This section ends with an analysis of the common non-commercial responsibilities undertaken by NOCs, as well as the relationship between governments and NOCs .

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[91] Ma, X. (2007). Chinese National Oil Companies' Overseas Investment: Myth and Reality'. *Petroleum Review, Sep* 18-20. Ma, X., & Andrews-Speed, P. (2006). The Overseas Activities of China's National Oil Companies: Rationale and Outlook. *Minerals and Energy 21*(1), 1-14. Öðütçü, M., & Ma, X. (2007). Growing Links in Energy and Geopolitics: China and the Middle East. *Insight Turkey, 9*(3), 96-122.

3.2.1 The nature of IOCs in terms of their relationship with their shareholder

The relationship between IOCs and their shareholders is formal and transparent mainly due to the commercial focus of their operation, the availability of good quality data, their practice of regular auditing, as well as a sound corporate governance structure employed by them.

Private oil companies pursue commercial interests comprising of long term growth and short term profitability in order to maximise their shareholder value. In the case of the largest IOCs, the objective of their shareholders is highly commercial. They are often measured by a proper rate of return for their capital, which took the form of "Return on Capital Employed" ("ROCE")[92] since the 1980s, together with a long term growth indicators, such as booking reserves and reserve replace rate. The latter set of indicators became increasingly important in recent years under the high price scenario.

The wide acceptance of international accounting standards makes it possible for private shareholders to measure and benchmark the performance of IOCs with each other, and to monitor and control them effectively. Additionally, the adoption of a sound corporate governance structure helps to protect the interest of shareholders. Furthermore, for public-listed companies, there is an extra layer of monitoring and control mechanism

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[92] Antill, N., Arnott, R., & Oxford Institute for Energy, S. (2002). *Oil Company Crisis: Managing Structure, Profitability and Growth*. Oxford: Oxford Institute for Energy Studies. p.52-64. The indicator ROCE is defined as return on capital in this context is operating earnings after tax but before interest payments (Net Operating Profit After Taxation, or NOPAT), divided by capital employed, which is taken to be the sum of shareholders' funds (including minority interests) and net debt. Scaroni, P. (2006). IOCs Versus NOCs-a New Game? *Petroleum Review March*, 24-26.

from stock exchange regulators and market analysts.

3.2.2 The nature of NOCs in terms of their relationship with their shareholders

Different from IOCs, a National Oil Company represents a direct government intervention in the petroleum industry. It is an oil company operating in some part of the oil value chain, fully or partially owned or controlled by their government.[93] The major difference between NOCs and IOCs originates in the different nature and agenda of their shareholders.[94] The multi-identity of government as a shareholder, resource owner, and regulator differentiates it from purely commercial shareholders. They often have a commercial agenda to pursue as shareholders of NOCs. However, as regulators and petroleum resource owners, they also have a wide range of economic, social and political concerns in terms of governing the petroleum sector.[95] These special considerations as well as their lack of regulatory capacity,[96] often drive governments to assign their NOCs with a wide range of non-commercial responsibilities in addition to their commercial responsibility. For similar reasons, the governments tend to employ a more proactive approach in regulating their NOCs, and often retain a tight control of them. As a result, the relationship between governments and NOCs is much more

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[93] Stevens, P. (2004). National Oil Companies: Good or Bad-a Literature Survey. *CEPMLP Internet Journal(14)* Retrieved 02 April, 2008, from http://www.dundee.ac.uk/cepmlp/journal/html/Vol14/Vol14_10.pdf.

[94] Hartley, P., & Medlock III, K. B. (2007). *A Model of the Operation and Development of a National Oil Company*: James A. Baker III Institute for Public Policy, Rice University. p.2

[95] Bentham, R. (1988). Legal Status of State Petroleum Companies In N. Beredjick & T. Walde (Eds.), *Petroleum Investment Policies in Developing Countries* (pp. 257-261). London/Dordrecht/Boston: Graham and Trotman. p.258

[96] Lucas, A. R. (1985). State Petroleum Corporations: the Legal Relationship with the State. *Journal of Natural Resources Law, 3*, 81-101. p.83. It is also possible that some governments establish NOCs for non-laudable reasons such as to pursue private political or financial interests, which is not the major content of this thesis as discussed in chapter 1.

complicated than that between IOCs and private shareholders.

3.2.2.1 The specific petroleum-related concerns of governments

Economic concerns of oil producing countries

For oil producing countries, the major economic concerns of a government in terms of governing the petroleum sector are security of demand, proper resource management, maximise long term and short term economic rent, and the promotion of economic linkages.

A diversified, reliable and stable level of international demand for crude oil at a reasonable price is of critical interest to oil producing countries, and it is not the private sector's target to provide security of demand.[97] To secure long term security of demand, oil producing countries may get involved in cooperation with major consumer countries to develop infrastructure or to promote trust.[98]

Due to the existence of social obligations funded by oil revenue, governments of oil producing countries normally have a higher expectation of international oil price than

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[97] Stevens, P. (1998). Strategic Positioning in the Oil Industry: Trends and Options. In P. Stevens (Ed.), *Strategic Positioning in the Oil Industry* (pp. 1-22): The Emirates Centre for Strategic Studies and Research. p.17-18. Hausmann, R., & Rigobon, R. (2003). An Alternative Interpretation of the 'Resource Curse': Theory and Policy Implications. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 13-44). Washington D.C.: International Monetary Fund. p.37

[98] It is argued that vertical integration could hedge the negative impact caused by volatile revenue, this explains why many OPEC members' NOC are expanding to the downstream sector. This could also be demonstrated by the increasing interest of the Middle East Countries to promote bond with fast growing consuming countries such as China. Beng, P. K., & Li, V. Y. W. (2005). China's energy dependence on the Middle East: boon or bane for Asian security? *The China and Eurasia Forum quarterly* 3(3), 12-19.

IOCs' shareholders. For example, a recent study conducted by PFC energy revealed that Saudi Arabia and Iran "require oil to stay at $55 just to break even", while the break even figure for Venezuela reached as high as $94 in 2008, and $97 in 2009.[99] In order to maintain higher international oil prices, governments may cooperate with other oil producing countries to manipulate production levels in order to maintain the price level within a certain band, not too high to damage the long term security of demand, and not too low to damage revenue income.[100] Whereas IOCs, arguably aim at a lower price level compared to oil producing countries for the purpose of securing market share. Also, private companies that have invested huge amounts of capital have a shorter time perspective, as their shareholder expect them to maintain a certain level of production in order to achieve profitability targets.

Oil producing countries also want to maximise sustainable economic benefits from their oil reserves by proper reserve management and could have views different from private companies. Arguably host governments have a longer view than private players.[101] Private players, especially those with limited years of access to resources may extract resources in a way that may damage long term recovery rate. Meanwhile, during

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[99] Bowman, J. (2008). Oil-rich nations dependent on record prices [Electronic Version]. *Arabian Business* Retrieved 17th July 2008 from http://www.arabianbusiness.com/513314-oil-producers-addicted-to-record-prices.

[100] The most obvious case is the quota management system employed by the Organisation of Petroleum Export Countries.

[101] Hartshorn, J. E. (1993). *Oil Trade, Politics and Prospects*. New York: Cambridge University Press. p.40-41. It is said that "IOCs are thinking not of the long-term prosperity of host country but of shareholder exceptions of returns in the next quarter". Marcel, V., & Mitchell, J. V. (2006). *Oil Titans: National Oil Companies in the Middle East*. London and Washington, D.C.: Chatham House and Brookings Institution Press. p.40-41

exploration stage, private companies that have secure access to blocks for a significant length of time may delay investment, especially when there are no sufficient regulations to prevent them from doing so. Whereas it is in the interest of governments to ensure that private players invest certain amount of capital and conduct certain amount of working programme.[102]

Governments from Oil producing countries, in theory also want to maximise their long term economic rent through the establishment of proper fiscal regime. However, private oil companies' target is to maximise after-tax profit. Many of them, especially IOCs may resort to measures such as "internal transaction price" to minimise their taxation burden. Private companies may also manipulate their expenditures to minimise their payment to resource governments, the so-called "gold-plating behaviour". These behaviours may have a huge negative impact on resource countries' economic interests, especially when governments are not well equipped to spot and stop these behaviours. Additionally the general economic benefit for a country could also be enhanced through fostering the development of domestic industry, and promoting domestic economic linkages.[103] Most governments seek to promote or foster the development of other domestic sectors, such as manufacturing and service sectors, train domestic staff, promote technology transfer and promote employment through the development of the

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[102] Lucas, A. R. (1985). State Petroleum Corporations: the Legal Relationship with the State. *Journal of Natural Resources Law, 3*, 81-101. p.83. These measures could help optimise the Speed of Extraction (time Period) and Recovery rate (prevent waste of resources).

[103] Taverne, B. (1999). Petroleum, Industry and Governments - An Introduction to Petroleum Regulation, Economics and Government Policies: Kluwer Law International. p.90

petroleum sector.[104] However, most of these activities may not be in the interests of private enterprises.

Government of oil producing countries may also have other specific concerns under specific circumstances. For example, generating foreign currency is another specific economic concern, especially when an oil producing country is having a shortage of foreign reserves and therefore facing a foreign currency payment crisis.

Economic concerns of oil consuming countries

For oil consuming countries, security of domestic supply is a major economic concern and normally a core element of a country's energy policy. A safe, stable, reliable and affordable supply of crude oil and oil products is extremely important for domestic industry and welfare of households. However, it is perceived that private players, especially foreign players are not in a position to provide security of supply.[105]

Although security of supply is important for developed countries, they are more critical for developing countries which are less able to afford petroleum at international prices, and lack an adequate market system to ensure the smooth distribution of oil and gas domestically. This is especially true for countries with large populations and a regulated

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[104] Wright, G. (2001). *Resource Based Growth then and Now*: World Bank. p.11. For example, in Latin America countries, historically, "European settlement was largely motivated by the search for precious metals; but the Spanish and Portuguese rulers had little interest in the possible spill over benefits of knowledge and techniques from gold and silver mining for broader mineral development."

[105] Grayson, L. E. (1981). *National oil companies*. Chichester: Wiley. p.9

oil price system which serves as a disincentive for private players to participate in petroleum activities and increases the risk of supply disruption. Countries such as China, India, Brazil, Indonesia and Iran are in this category.[106] For many countries driven by security of supply considerations, a self-sufficiency policy may be employed since it is argued that domestic production could reduce the dependence on foreign oil suppliers. "Such dependence makes any country economically and therefore political vulnerable".[107]

Social considerations

The failure to address the economic issues discussed in the prior sections could result in social unrest. For example, the failure of governments and local communities to benefit from resource extraction could result in social instability in oil producing countries. Whereas failure to ensure a stable, reliable and affordable supply of oil could cause severe negative social impacts in oil consuming countries. Governments also have social equity concerns in terms of oil consumption. In response, governments tend to subsidise domestic oil price and enforce a regulated price system, especially in developing countries, as has been mentioned in the previous section.

Another major social concern of governments is to minimise negative impacts of

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[106] Mayorga-Alba, E. (1995). *Deregulation and Reform of Petroleum Markets: From Monopolies to New Regulated Markets* (No. 6): The World Bank Group. England, A. (2007). Egypt Weighs Domestic Energy Needs as Export Demands Grow. Financial Times. London: 8.

[107] Taverne, B. (1999). *Petroleum, Industry and Governments - An Introduction to Petroleum Regulation, Economics and Government Policies*: Kluwer Law International. p.87-90

resource extraction activities.[108] The petroleum sector has a complex relationship with society because of the environment impacts and operations, which may be prone to accidents and casualties. The upstream exploration and production of oil and gas may harm the natural environment, soil, water and air. Explosions and blowouts occur not only during exploration, and production stages, but also during refining, transportation, and storage stages, thereby threatening human life and ecological systems.[109] Host governments may be concerned that oil companies could sacrifice Health, Safety and Environment ("HSE") priorities for their commercial interests.[110] This is especially true where governments lack the capacity to identify, regulate, and prevent possible threats. For example, even the industry leader BP was widely accused for its "cost cutting" culture which could have negative security and environment impacts.[111] Developing countries tend to have a much lenient legislation in terms of curbing environment related issues.[112] Arguably, NOCs in resource rich countries are observed to have a poor environmental record compared to IOCs. However, they normally perform better than private domestic players. For instance, the small share of reserves allocated to regional governments and private players in Shannxi provinces in China resulted in

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[108] Andrews-Speed, P., & Ma, X. (2008). Energy Production and Social Marginalisation in China *Journal Of Contemporary China 17*(55), 247-272.

[109] Taverne, B. (1999). Petroleum, Industry and Governments - An Introduction to Petroleum Regulation, Economics and Government Policies: Kluwer Law International. p.9

[110] BP 's 2007 US law cases over the Texas refinery exploration and Alaska pipeline erosion illustrated a typical conflicts between cost-cutting and HSE standards during petroleum related operations

[111] Johnson, A. (2006). BP Boss Attacks Cost-cut Culture. The Express. UK: 49.

[112] Ascher, W. (1994). Survey of Issues in Government Policy and Public Management of State Oil and Mining Companies in Developing Countries. *Natural Resources Forum, 18*(1), 3-11. p.6. "while oil and mining companies pose environmental problems whether they are private or state owned, state enterprises sometimes attract more lenient sanctions for polluting than do private companies. When the government's own revenues depend directly on resource extraction, environmental regulators may be more likely to compromise their obligations to the environment. More over, the chronic undercapitalization of state oil and mining companies leaves them with inferior pollution control capabilities"

severe environmental damage and social disorder in 1990s. This partially resulted in the government decision of gradual transferring of these reserves from the regional governments and private players to their NOCs.[113]

Political considerations

Failures in terms of addressing economic and social concerns mentioned above could result in political instability. In addition to that, governments may have many petroleum-related political interests. In countries with the oil sector playing a significant role in domestic economy, there is a tendency for petroleum related issues to be highly politicised. In these countries, control over the petroleum sector and revenue generated from it is critical for political influence. The nature of political interests varies among countries and political regimes. For example, Eifert, Gelb and Tallroth grouped countries into five categories including mature democracy, factional democracy, paternalistic autocracy, reformist autocracy and predatory autocracy, and noticed the difference dynamics and pattern of behaviours of their government in managing their resources.[114]

In addition to petroleum related economic, political and social concerns, it is worth pointing out that, as part of national economy, the petroleum sector could be used as an

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[113] Zhang, W. (2002). The Rampant Illegal Oil Exploration in Shannxi Province (in Chinese) [Electronic Version]. Retrieved 1st Mar 2007 from http://www.chinanews.com.cn/2002-09-11/26/221574.html.

[114] Eifert, B., Gelb, A., & Tallroth, N. B. (2003). The Political Economy of Fiscal Policy and Economic Management in Oil-Exporting Countries. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 82-122). Washington D.C.: International Monetary Fund. p.89

agent of governments to support general economic, political and social issues when the governments feel it necessary and when other needs have higher priority from governments' perspectives.

3.2.2.2 The major non-commercial responsibilities of NOCs

Most of the special concerns analysed in the previous section could be addressed by laws and regulations. However, due to ideological considerations and the lack of regulatory capacity, many governments consider NOC a more effective tool in addressing these issues. As a result, governments tend to assign non-commercial responsibilities to their NOCs, in addition to their commercial ones. The content of these non-commercial responsibilities varies from time to time and from country to country. Normally NOCs may perform two types of non-commercial responsibilities, namely, those relating to administration and regulation of the petroleum sector and those relating to other economic, social and political liabilities.

The first set of non-commercial responsibilities includes regulatory and administrative responsibilities. Typical regulatory responsibilities comprise the formulation of price policy, market policy, investment policy, reserve management policy, and fiscal policy. Major administrative responsibilities include product quality administration and market operation administration.

The second set of non-commercial responsibilities includes petroleum sector related

responsibilities and general responsibilities. The petroleum sector related responsibilities concludes assuring security of supply (for consumer/importer countries), guaranteeing sovereign power over all petroleum resources, controlling or influencing the regional or global resources allocation in favour of a country, assuring diversified, safe and stable petroleum market (for producer/exporter countries), developing domestic exploration of resource and entitled overseas resource, setting up strategic petroleum reserves, acquiring petroleum sector related knowledge, skills, techniques and expertise, and developing substitute energy sources. General responsibilities include improving a country's international influence and leading role in regional area, expanding the linkage of the petroleum industry to other domestic industries, rectifying the imbalance of regional economy, promoting social equity, providing employment and staff training, environment protection and sustainable development,.

The non-commercial responsibilities of NOCs vary from country to country and from time to time. The content and scope of non-commercial responsibilities of NOCs also differ according to the specific concerns of their governments, the relative priority assigned to these concerns, and the ability of their governments to achieve these concerns without using NOCs.[115] The next section will analyse the general trend of this variation of responsibilities by viewing the historical evolution of NOCs.

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[115] In many countries with insufficient regulatory framework, market rules, and private sectors, governments prefer to resort to direct intervention of their petroleum sector and to establish NOCs. This explains why NOCs are more frequently find in developing countries or developed countries in the early stage of their petroleum industry.

3.2.2.3 The supporting system between government and NOCs

As discussed at the beginning of this section, the supporting systems governments employ in regulating NOCs is often different from that of private shareholders. Governments tend to take a more proactive approach in controlling the important aspects of NOCs' activities such as investment, marketing or financing, the cash flow of NOCs and the appointment of senior management of NOCs. Governments also tend to intervene in the operations of NOCs more frequently and give direct administrative orders to NOCs.

This use of proactive approach is mainly due to the difficulty in measuring the performance of NOCs, and in monitoring and controlling them. First, the common practice of assigning NOCs with non-commercial responsibilities and regulating oil domestic prices makes it difficult to measure the performance of NOCs using quantitative data. Second, the lack of regulatory capacity, especially the lack of high quality data to measure and benchmark the performance of NOCs makes it hard for governments to monitor and control the activities of NOCs. As a result, lest NOCs may get out of control at the cost of governments and grow into "a state within a state", governments often resort to tight control and direct intervention.

3.3 The drivers of NOC reforms

This section aims to analyse in detail the factors that drive reforms of NOCs which in turn will change the NOC-government relationship. As has been analysed in section 3.2

the changing nature and agenda of governments play an important role in reforming NOCs.. This change in turn is often driven by changes in the international petroleum sector as mentioned in section 3.1, in dominant domestic economic and political ideologies and situations, in the nature of the domestic petroleum sector, and in national capacity of a country.

3.3.1 The economic and political ideologies

The establishment of NOCs is supported, in many circumstances, by certain ideologies underpinned by theories, such as theories relating to market failure, Keynesian economics, structuralism, and ideologies such as socialism and nationalism. Ideological change is an important driver for NOC reform. The market driven reforms of NOCs are generally supported by ideologies such as the free market ideology, "conflict of identity effect" and "multi-function effect".

3.3.1.1 Ideologies supporting the establishment of NOCs

The major ideologies that have played a role in the establishment of NOCs include economic ideologies such as market failure, Keynesian economics, and structuralism. They support free market ideology, but argue that for certain reasons, markets may not function ideally, and thus need government intervention. There are other ideologies such as socialism and nationalism, which do not support free market ideology.

Main stream economic theories claim that a free market is the best means of achieving

efficiency. A perfect market is normally defined as a market characterised by a large number of buyers and sellers, who are rational and are aiming at utility-maximisation. Such market is transparent with information being available to everybody. Also it is fully competitive with neither barriers to entry, nor collusion among firms in the industry.[116]

However, for many reasons, an unregulated market may fail in allocating resources in an effective way, causing "market failure".[117] Typical causes of market failure include limited information, poor definition of property rights, external costs and external benefits, monopoly power and public goods. Many of these are relevant to the petroleum sector and therefore could justify the establishment of NOCs. For example, the long value chain and complex technology used by the petroleum sector makes it very difficult for external stakeholder to access information and to interpret it, resulting in high entry barriers and preventing the market from functioning well. Additionally, high external cost incur, due to the social and environmental impact related to petroleum activities. Furthermore, the capital-intensive and pipeline-bound nature of this sector makes it prone to natural monopoly. Finally, the security of supply or demand being public goods often justifies government intervention in the sector.

Keynesian economics also argues for government intervention in the economy with the

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[116] Parkin, M., Powell, M., & Matthews, K. (1998). *Economics* (4 ed.): Pearson Education Limited. p.270-288

[117] Ibid. p286

focus on the role of governments for managing inflation, employment and economic fluctuation. The proponents of the Keynesian economics argue that natural employment rate determined solely by the market is below the rate which is optimal for a country. Therefore, government intervention is needed to maintain a higher employment rate although it may be accompanied by a higher inflation rate. To press their claim, they posit that the need to curb inflation is less important than the need to increase employment. Meanwhile, they argue that the natural macroeconomic fluctuations are harmful for economic well-being. Therefore, they believe that governments are "knowledgeable and capable enough to improve upon the free market", for example, by maintaining a high but stable inflation rate, governments can reduce unemployment rate and increase the total well-being in the economy.[118] Keynesian economics was very influential during the 1950s and 1960s, and many policymakers in Organisation for Economic Co-operation and Development ("OECD") countries adopted this ideology and "nationalisation of public utilities and industries" were employed as instruments of economic development.[119]

The theory of "structuralism" focuses on the differentiation of nations and therefore the

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[118] Blinder, A. S. Keynesian Economics The Concise Encyclopaedia of Economics Retrieved 17 Jan, 2007, from http://www.econlib.org/library/Enc/KeynesianEconomics.html#biography.

[119] Mankiw, N. G. New Keynesian Economics [Electronic Version]. *The Concise Encyclopedia of Economics*.Retrieved 17th Jan, 2007 from http://www.econlib.org/LIBRARY/Enc/NewKeynesianEconomics.html. Stevens, P. (2004). National Oil Companies: Good or Bad-a Literature Survey. *CEPMLP Internet Journal(14)* Retrieved 02 April, 2008, from http://www.dundee.ac.uk/cepmlp/journal/html/Vol14/Vol14_10.pdf. Blinder, A. S. Keynesian Economics The Concise Encyclopaedia of Economics Retrieved 17 Jan, 2007, from http://www.econlib.org/library/Enc/KeynesianEconomics.html#biography.

asymmetry of impact of free market.[120] Contrary to the mainstream economic theories, this theory argues that the free market does not necessarily diminish national differences and furthermore claims that empirical practice has proved the free market to be less effective for certain countries.[121] It also asserts that the efficiency gain through the use of free market may not be allocated equally among different countries, thereby increasing rather than decreasing differences between them. The theory also tries to justify government intervention in developing countries by arguing that such international economic order could further weaken these countries. This perception of developing countries against the then existing international economic order greatly influenced their national strategies, and government actions, to build their own capacities rather than rely on foreigners.[122] The ideology of structuralism is pertinent in the petroleum industry due to the gap between "corporate optimisation" undertaken by IOCs and "local optimisation" pursued by producing countries, and as a result, state participation "has emerged as a technique of securing national optimisation".[123]

Nationalism is a special form of "structuralism" which is commonly found in developing countries that take a defensive position due to weak skills, technologies and

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[120] Linde, C. V. D. (2000). *The State and the International Oil Market: Competition and the Changing Ownership of Crude Oil Assets*: Kluwer Academic Publishers. p.36.

[121] Fishlow, A. (1989). Inequality Between Nations. In J. Eatwell, M. Milgate & P. Newman (Eds.), *Economic development* (pp. xii, 350). New York ; London: W.W. Norton.

[122] Linde, C. V. D. (2000). *The State and the International Oil Market: Competition and the Changing Ownership of Crude Oil Assets*: Kluwer Academic Publishers. p.36

[123] Applewhite, V. (1982). *State Participation in the British Oil Industry: the BNOC*. Dundee: University of Dundee.p21-23

regulatory capacities.[124] For these countries, nationalism is a measure to address the negative asymmetry of the impact of free market.[125] However, nationalism in theory, may not justify NOCs, since direct outcome of nationalism is nationalisation of assets and resources. It is the joint outcome of nationalism and lack of domestic private capacity that causes the establishment of NOCs.[126] Further discussion on capacity shall be presented in section 3.3.4. The ideology of sovereign sanctity is an extreme form of nationalism. This ideology believes that oil is a sacred treasure of a country and neither foreigners nor private domestic players should be permitted to own or make decisions over it.

NOCs are also a result of socialist thinking, according to which collective interest is considered to be higher than individual interest, and social equity more important than efficiency. Collective ownership forms the core of socialism requiring key aspects of the economy to be kept under state control.[127] This justifies NOCs in FSU, China, and

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[124] Taverne, B. (1999). *Petroleum, Industry and Governments - An Introduction to Petroleum Regulation, Economics and Government Policies*: Kluwer Law International. p.81. Developing countries greet "the international oil companies with mixed feelings. On the one hand, they expect that international oil groups to help them generate wealth through the exploitation of the resource; and on the other hand they fear that the western oil companies will try to interfere and meddle in the domestic political situation and exploit the country through an unfair split of profits."

[125] Noreng, Ø. (2001). The New Balance of Private and Public Interests in the Restructuring of the Petroleum Industry- a European Perspective. *The Journal of Energy and Development 25*(2), 187-202. p.190-191

[126] Taverne, B. (1999). *Petroleum, Industry and Governments - An Introduction to Petroleum Regulation, Economics and Government Policies*: Kluwer Law International. p.81. Stevens, P. (2004). "National Oil Companies: Stevens, P. (2004). National Oil Companies: Good or Bad-a Literature Survey. *CEPMLP Internet Journal (14)* Retrieved 02 April, 2008, from http://www.dundee.ac.uk/cepmlp/journal/html/Vol14/Vol14_10.pdf.p.6

[127] "Socialism," as the American Socialist Daniel De Leon defined it, "is that social system under which the necessaries of production are owned, controlled and administered by the people, for the people, and under which, accordingly, the cause of political and economic despotism having been abolished, class rule is at end. That is socialism, nothing short of that."

India.[128] Another example is Algeria, which envisaged socialism through its NOC Sonatrach'.[129] Traces of socialist influence can also be found in western countries in the 1960s, believing that "the Soviet planning system was a promising mechanism to mobilise the resources of an economy to promote growth".[130] This trend influenced the establishment of NOCs in many OECD countries.[131]

The collapse of the Union of Soviet Socialist Republics ("USSR") and the fall of the Berlin wall in 1989 led to authoritarian socialism being increasingly replaced by democracy, capitalism, and free market ideology around the world,[132] though socialist rhetoric still survives in some countries. This is illustrated by the current "socialist revolution" and re-nationalisation of the oil sector pursued by the President Hugo Chavez in Venezuela. However, it is arguable whether the Venezuela's government believed in socialism or whether it was a convenient excuse for the government to nationalise and regain control over the sector.[133]

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[128] Friedman, T. L. (2005). *The World Is Flat: A Brief History Of The Twenty-first Century*, Farrar, Straus and Giroux. p.50. ONGC. ONGC: History Retrieved 14 Jan, 2007, from http://www.ongcindia.com/history.asp. ONGC. (2004). "ONGC road show slides." Retrieved 14Jan, 2007, from www.ongcindia.com/investor_cell/ONGC_Roadshow_Feb%2023.pdf.

[129] Stevens, P. (2004). National Oil Companies: Good or Bad-a Literature Survey. *CEPMLP Internet Journal (14)* Retrieved 02 April, 2008, from http://www.dundee.ac.uk/cepmlp/journal/html/Vol14/Vol14_10.pdf

[130] Stevens, P. (2004). National Oil Companies: Good or Bad-a Literature Survey. *CEPMLP Internet Journal (14)* Retrieved 02 April, 2008, from http://www.dundee.ac.uk/cepmlp/journal/html/Vol14/Vol14_10.pdf. Linde, C. V. D. (2000). *The State and the International Oil Market: Competition and the Changing Ownership of Crude Oil Assets*, Kluwer Academic Publishers. p.27.

[131] Stevens, P. (2004). National Oil Companies: Good or Bad-a Literature Survey. *CEPMLP Internet Journal (14)* Retrieved 02 April, 2008, from http://www.dundee.ac.uk/cepmlp/journal/html/Vol14/Vol14_10.pdf

[132] Friedman, T. L. (2005). *The World Is Flat: A Brief History of the Twenty-first Century*, Farrar, Straus and Giroux. p.49

[133] Judge, N. H. a. E. (2007). Venezuelan Currency Dives as Chavez Plots Nationalisation. The Times. London: 32.

3.3.1.2 Ideologies supporting commercialisation of NOCs

The major ideology supporting commercialisation of NOCs is the free market ideology, which redefined the role of government in national economy. As has been analysed in section 2.2, the free market ideology was supported by the IMF, World Bank and the Chicago school, representing the so called "Washington consensuses" and underpinned commercialisation of many NOCs in 1990s.[134] Additionally, more theories have been developed since 1970, which argue that the private sector out performs the public sector in keeping costs low and in being innovative due to the existence of soft incentives, and incomplete contracts in the public sector.[135] Therefore the role of governments "should be limited to setting framework, within which the scope of market forces would be maximised".[136] Other theoretical developments such as the P-A theory further challenged the role of governments as shareholders.

According to these schools of thought, not only fields such as natural resources and infrastructure, traditionally occupied by state owned enterprises, but also fields such as prisons and education should be commercialised under proper regulations formulated by government. Even in fields where natural monopoly prevails, such as grid bound

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[134] Stevens, P. (1998). Strategic Positioning in the Oil Industry: Trends and Options. In P. Stevens (Ed.), *Strategic Positioning in the Oil Industry* (pp. 1-22): The Emirates Centre for Strategic Studies and Research.p.13. McPherson, C. (2003). National Oil Companies: Evolution, Issues, Outlook. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 184-204). Washington D.C.: International Monetary Fund. p.186

[135] Shleifer, A. (1998). State Versus Private Ownership. *Journal of Economic Perspectives 12*(4), 133-150. p.137. "When assets are publicly owned, the public manager has relatively weak incentives to make investment in both cost reduction or innovates they only gets a fraction of the return."

[136] Helm, D. (2004). *Energy, the state, and the market: British energy policy since 1979* (Rev. ed.). Oxford: Oxford University Press. p.14

industries of gas and power, market forces and the commercial sector are believed to be in a better position to cut costs and maximise efficiency under effective governmental regulation.[137] These ideologies are reflected in the privatisation of NOCs in the UK.[138]

Additionally, there were new theories based on empirical observations and theoretical analysis of the nature of NOCs as agents of governments, taking non-commercial responsibilities.[139] It was gradually realised that the co-existence of commercial and non-commercial responsibilities caused inefficiency because of the "conflict of identity effect" and the "multi-function effect".[140]

For NOCs with administrative and regulatory power, the "conflict of identity" effect exists as these NOCs are both "game players" and "referees", and could therefore use their power to pursue benefits for themselves.[141] This in turn could foster corruption and nepotism, and have a detrimental impact on public interest and on the overall performance of NOCs.[142] For example, a parliamentary investigation revealed that two

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[137] Shleifer, A. (1998). State Versus Private Ownership. *Journal of Economic Perspectives 12*(4), 133-150. p.135-141. It was claim that 'the business of government is not the government of business" and "a government could print a good edition of Shakespeare's works, but it could not get them written". Business, E. (2007). EU Vows Action to Boost Energy Market Competition [Electronic Version]. Retrieved 12th Jan 2007 from http://www.eubusiness.com/Consumer/1168434027.82/.

[138] Noreng, Ø. (2001). The New Balance of Private and Public Interests in the Restructuring of the Petroleum Industry- a European Perspective. *The Journal of Energy and Development 25*(2), 187-202. p.194. The US administration's influence of oil prices: showed how state interests interfere in the oil market, even under governments with an ideological belief in the market

[139] Sandvold, T. (2001). Groupings of National Oil Companies. *the oxford energy forum, 57*, 12.

[140] Bai, C.-E., Li, D. D., Tao, Z., & Wang, Y. (2000). A Multitask Theory of State Enterprise Reform. *Journal of Comparative Economics 28*(4), 716-738.

[141] McPherson, C. (2003). National Oil Companies: Evolution, Issues, Outlook. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 184-204). Washington D.C.: International Monetary Fund.

[142] Ibid

French NOCs Total and Elf had tailored public policy to "their own benefit", sacrificing the interests of French consumers in 1970s.[143]

For NOCs with social and economic responsibilities, there is a "multi-task effect" when financial resources and managerial capacities of NOCs are drained and managements are distracted. For example, a large amount of money from NOCs in Gulf countries has been channelled towards infrastructure such as highways, telecommunications, housing, education and medical care.[144] The treatment of NOCs as a cash cow, as the Pemex case shows, damages the long-term development of the petroleum sector and causes the decline of reserves and production levels in the country.[145] As a result, NOCs are running out of capital to invest as they are not properly compensated by their governments for their non-commercial responsibilities.[146] The existence of these non-commercial responsibilities also makes it difficult for the government to measure the performance of NOCs, and therefore results in NOCs with insufficient check and balance mechanisms, which has a further negative impact on the performance of NOCs and push government to reform.

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[143] Noreng, Ø. (2001). Liberalisation, Integration, and Specialisation: the Restructuring of the European Oil Industry *Journal of Energy and Development, 26*(1), 35-54. p.36.

[144] Al-Mazeedi, W. (1998). 'Back-door' Privatisation Initiatives in the Gulf: An Inadequate Step in the Right Direction. In P. Stevens (Ed.), *Strategic Positioning in the Oil Industry* (pp. 100-116): The Emirates Centre for Strategic Studies and Research.

[145] Gallardo, J. R. F. (2003). *Fiscal Liabilities and their Influence on the Performance of a State Oil Company: the Case of PEMEX*. Unpublished Research paper University of Dundee, Dundee. p.31. "Heavy financial burden 'has left the company without resources to make its own strategic investments. The final effect has been a significant decrease in the proved oil and gas reserves"

[146] Gallardo, J. R. F. (2003). *Fiscal Liabilities and their Influence on the Performance of a State Oil Company: the Case of PEMEX*. Unpublished Reserch paper University of Dundee, Dundee. p.31.

3.3.2 Domestic political situation

As important providers of revenue, foreign currency and employment, NOCs are normally a battlefield for vested interest groups competing for influence. Political struggle among them and changes in domestic political situation, such as changes of political regime, and in the nature and agenda of ruling parties, are common drivers for NOC reform.

The commercialisation of NOCs may be a result of political struggle among vested interest groups, including central or regional politicians, bureaucrats, labour unions, ambitious senior managers in NOCs, and the public, whose cause may be championed by the media. In many cases, the contents of proposals for reforming NOCs are an outcome of complicated interactions, conflicts and compromises between interested parties. Frequently, NOC reform is a central government response to threats from NOCs behaving like a "state within a state", with too much power and ambition, or from state or provincial government seeking power to control the revenue.

For example, the establishment of the Chinese NOC Sinopec in 1980s is an example of a central government attempting to wrest control of the profit generated in the oil refining sector from provincial governments. The Chinese government also opted out of a reform proposal in 1998 which envisaged the breaking of the NOCs into a number of regional NOCs. The reason for this was to retain power in the hands of central government rather than letting it devolve to provincial governments through their

control or influence on the regional NOCs.[147] The commercialisation of Statoil in the 1980s and 1990s was partially because the Norwegian government realised the scale of the power accumulated by Statoil through its easy access to resources and its close relationship to local communities as the largest employer.[148] In Malaysia, the political pattern, with power focused in the hands of the prime minister, resulted in the specific petroleum regime where controlling power lay in the hands of the prime minister in order to prevent other ministries and local state governments from intervening.[149]

Changes in the nature of the government also remain a major driver of NOCs reforms, especially when different political regimes hold completely different economic policies. Arguably, a more transparent government with a good governance record faces more political pressure from the economic performance of a country and therefore has less incentive to control NOCs and is more likely to commercialise its NOCs. This is demonstrated to some extent in the commercialisation of NOCs by almost all democratic industrialised countries such as Canada, Britain and Norway. On the other hand a less transparent government may be more reluctant to commercialise its NOCs, in order to seek political patronage or other interest through NOCs.[150]

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[147] Nolan, P. (2001). *China and the Global Business Revolution*: Palgrave. p.446

[148] Richardson, J. J. (1981). Problems of Controlling Public Sector Agencies: the Case of Norwegian Oil Policy. *Political Studies, 29*(1), 35-50.

[149] Mehden, F. R. V. d., & Troner, A. (2007). *Petronas: A National Oil Company with an International Vision*: The James A. Baker III Institute for Public Policy, Rice University.

[150] Lahn, G., Marcel, V., Mitchell, J., Myers, K., & Stevens, P. (2007). *Report on Good Governance of the National Petroleum Sector*. London: Royal Institute of International Affairs.

Changes in the agenda of ruling parties also drive reforms of NOCs. For example, during the low oil price stage in 1990s, countries such as Russia, Kazakhstan and Venezuela all employed a commercially driven petroleum policy, which emphasised on attracting foreign direct investment in order to explore their vast resources. However, under the high oil price scenario since 2000, rich with petroleum revenue, these countries all started to pursue a less commercially driven petroleum policy and sought to use the petroleum sector as a tool to achieve certain foreign relations goals or to reinforce the country's regional and global influence. For example, the determination of the Russian government to use petroleum exports to consolidate its domestic and international influence is part of the rationale for the President Putin's administration to renationalise the petroleum sector and to reinforce government control over Gazprom and Roseneft.[151]

3.3.3 Domestic economic situation

The economic situation of a country and its petroleum sector is also an important factor, changes in which often drive NOC reforms.

The petroleum sector is part of the national economy, to a large extent influenced by the general economic policy and overall situation of the latter. A country's overall economic policy influences the way in which the government structures and manages its petroleum sector. For example, the globalisation and free market policies adopted in

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[151] Norling, N. (2007). China and Russia: Partners with Tensions. *Policy Perspectives, 4*(1), 33-48.

some countries are important factors influencing the nature of NOCs and their reforms. China's entry in the WTO played an important role in increasing the pace of commercialisation of the NOCs.[152]

The scope and nature of the economy, the rate of economic growth, dependency of domestic economy on petroleum sector, and role of markets in the economy are important factors driving NOC reforms. Therefore, it is observed that NOCs are often under reforms when countries run into extreme economic difficulties. Commercialisation of NOCs could be one of the measures to alleviate the financial burden of a country. However, some countries with limited economic resources, may seek to nationalise NOCs in order to control and utilise their limited resource on high priority projects. The organisation of the petroleum sector under strict government control during Cultural Revolution in China illustrates this.

On the other hand, changes in the economic situation of the petroleum sector also frequently drive reforms. The co-relationship between the petroleum sector and the national economy lies in the ability of the petroleum sector to provide fuel, foreign currency, revenue, profit, employment and other services to the government. The higher the contribution of the petroleum sector to the GDP, revenue, fuel, and foreign currency earnings and other contributions, the higher is the likelihood of governments choosing

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[152] Qiu, B. (2000). *Chinese Petroleum sector challenging WTO*. Beijing: The Petroleum Industry Publishing House.

to control the sector through NOCs. The most important parameters impacting the importance of the petroleum sector in the national economy are proven reserves, production capacity, production cost, domestic consumption level, domestic price policy, nature of the international petroleum sector, and the level of international price.[153]

The proven reserve and production capacity of a country are influenced by the resource endowment and past investment in production capacity in the country. An NOC in a country with a depleting resource base faces stronger commercial pressure. It also hinders future expansion of NOCs and their survival, bringing higher pressure on them to seek changes. The example of NOC reforms in China since the 1980s is partially caused by the depleting resource base in the country. This was also the case in Brazil and Indonesia in 1980s and 1990s.[154]

The cost of production is another core factor deciding the importance of the petroleum sector in the domestic economy. The higher the cost of extracting and producing oil, the lower the amount of the rent realised, and the greater is the pressure governments face to reform NOCs. Cost is not only a function of the quality of resource, but also a function of operational and investment performance of a company.

The consumption level and pricing policy, especially subsidy policy of a country, are

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[153] The Economist, All this and Oil too (2007). *The Economist*, PP 57-58.

[154] Reduction of production in Mexico also drove the recent government initiative to reform their petroleum sector.

also important factors influencing the petroleum sector. Many developing countries especially those with petroleum production of their own, choose to subsidise their oil prices under political pressure to satisfy the needs of the poor, despite the the unsustainable nature of the policy.[155] On the one hand, the implementation of such policy measures requires the support of NOCs, especially when government lacks regulatory capacity to enforce the policy on its own. Thus drive government to remain control over NOCs. On the other hand, the scale of subsidy is a financial burden on government and NOCs. The higher the consumption level and extent of subsidy, the higher pressure the government and NOCs bear, and therefore face higher pressure to commercialise. This explains why commercialisation taken place more frequently in countries such as China, Brazil, Indonesia and Malaysia when domestic consumption and subsidy eroded a large percentage of economic rent. Even in oil rich country such as Iran, the government started to increase the price of oil products for similar reasons.

For a country exporting their oil, the domestic economic situation is also influenced by the nature of the international petroleum market and the price level prevailing in the market. The more developed the international petroleum market; the lower is the transaction cost, and the less likelihood of the market being manipulated.[156] As a result,

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[155] Heaton, C. (2005). Paying the Price. *Petroleum Economist* (January).

[156] Parkin, M., Powell, M., & Matthews, K. (1998). *Economics* (4 ed.): Pearson Education Limited. p.270-288. The concept of perfect market could be defined a market with competition and no market failure, which could be defined as 'a market characterised by a large number of buyers and sellers, who are rational and aiming at utility-maximisation; market is transparent and information are available to everybody; and competition is open with no entry barrier, and there is no collusion among firms in the industry'. James, T. (2007). *Energy Markets: Price Risk Management and Trading* John Wiley & Sons Ltd. p.91

both producer and consumer countries will have higher tendency to employ market measures in achieving their special concerns. Lack of a well-developed and well-regulated international petroleum market justified the large-scale establishment of NOCs in 1960s to 1970s and the commercialisation of NOCs since 1980s.

In addition to general level of development of the international petroleum market, the specific international price level is also a critical driver for NOC reforms. High price level triggers a tendency to nationalise and a low price level triggers a tendency to commercialise. This is because, under a high price scenario, there is more rent generated by the petroleum sector in producer countries, which makes NOCs more attractive to be controlled. Meanwhile, for governments of consumer countries, higher prices imply a higher concern for security of supply. As a result, governments tend to have NOCs as their agents to pursue security of supply. By the same token, when oil price level is low, there is a higher possibility for both producers and consumer countries to conduct reforms and to commercialise their NOCs.

3.3.4 National capacity

There is another set of factors that are important in driving reforms of NOCs. To simplify, the thesis calls them national capacity. The national capacity of a country could be defined as a combination of (1) government regulatory capacity in terms of regulation of general economy and regulation of the petroleum sector; (2) general or petroleum specific market capacity; and (3) general or petroleum specific industrial

capacity.[157] The national capacity of a country is an important factor to drive reforms of many NOCs because the establishment of NOCs in the first place is often caused partially by a lack of national capacity. Most of the non-commercial responsibilities of NOCs introduced in section 2.2 could in theory be achieved by indirect approaches such as laws and regulations, through the actions of government agencies and through activities of private sectors and the market.[158] However, due to the lack of all or some capacities, in many countries the model of the commercialised and liberalised sector is perceived to be inappropriate.[159] As a result, NOCs are established by governments to conduct certain non-commercial responsibilities when the governments lack regulatory or administrative capacity, or when the private industry lacks commercial capacity, or when the market lacks the capacity to function effectively. As countries acquire relevant capacity they can gradually reform their NOCs accordingly.[160]

Government regulatory capacity means laws, regulations, policies, institutional capacity and qualified staff to regulate. There are two types of capacity relevant to NOCs, namely the general economic regulation capacity and specific capacity to regulate the

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[157] Al-Kasim, F. (2006). *Managing Petroleum Recourses: The "Norwegian Model" in a broad Perspective Oxford Institute for Energy Studies.* p.27, 139.The concept of 'enterprise capacity' is defined in the book as the capacity of a given country or a commercial entity to mobilise institutional, financial and technological resources to make the best out of a given set of resource and market expectations. United Nations Centre for Natural Resources, Energy and Transport Dept of Technical Co-operation for Development (1980). *State Petroleum Enterprises in Developing Countries*. New York: Published for the United Nations by Pergamon Press. p.5

[158] Shleifer, A. and R. W. Vishny (1998). *The Grabbing Hand, Government Pathologies and Their Cures.* Cambridge, Mass., Harvard University Press. p.2

[159]Stevens, P. (2004). National Oil Companies: Good or Bad-a Literature Survey. *CEPMLP Internet Journal (14)* Retrieved 02 April, 2008, from http://www.dundee.ac.uk/cepmlp/journal/html/Vol14/Vol14_10.pdf. p.5, 7

[160] Bentham, R. W., & Smith, W. G. R. (1986). *State Petroleum Corporations: Corporate Forms, Powers and Control* Dundee, Scotland: The Centre for Petroleum and Mineral Law Studies, University of Dundee. p.3

petroleum sector. Many developing countries lack this capacity due to insufficiency of relevant laws, regulations, institutional structure and qualified staff to regulate both their economy and their petroleum sector efficiently. For example, the capacity to collect and interpret economic information, and the capacity to asses tax are important aspects for governments.[161] Owing to a lack of such capacity in some developing countries, governments are constrained to keep NOCs as information and tax collectors as well as training and local linkage providers. NOCs can help their governments to build such capacity through "learning by doing". NOCs can also act as windows for governments to acquire key information on the industry, gain insight into the industry, and to develop human skills to analyse and interpret information, necessary for operating and regulating the petroleum industry.[162] It is argued that the bargaining power of government over private oil companies has a negative correlation with the amount of information involved in the operation. Lack of information on the part of host government places the government in a weak-negotiating position.[163] Governments may launch reforms to remove these mandates from NOCs once these capacity constraints in governments have been addressed.

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[161] Although this practice often accompanies with high economic cost, but for a government with weak capacity, there may not have much choices.

[162] Grayson, L. E. (1981). *National oil companies*. Chichester: Wiley. p.10. Noreng, Ø. (2001). The New Balance of Private and Public Interests in the Restructuring of the Petroleum Industry- a European Perspective. *The Journal of Energy and Development 25*(2), 187-202. p.190. Bentham, R. W., & Smith, W. G. R. (1986). *State Petroleum Corporations: Corporate Forms, Powers and Control* Dundee, Scotland: The Centre for Petroleum and Mineral Law Studies, University of Dundee. p.5

[163] Stevens, P. (2004). National Oil Companies: Good or Bad-a Literature Survey. *CEPMLP Internet Journal (14)* Retrieved 02 April, 2008, from http://www.dundee.ac.uk/cepmlp/journal/html/Vol14/Vol14_10.pdf. p.7. Not only was the split of revenue in favour of private companies but also the information will be held inside the company making it even more difficult to regulate. This creates the problem of information asymmetry.

Rich developed countries normally do not have problems with general economic regulation capacity. However, they may lack sector specific capacity in the early stage of their petroleum sector due to lack of experience. NOCs are frequently used as a tool to build these capacities gradually and acquire information.[164] This was the case in Norway when oil was first found in the North Sea Continental Shelf.[165] For developed countries, once the training process is finished and relevant regulation capacity is developed, NOCs may not be necessary any longer. Very often, they will be privatised or commercialised and made more similar to private players.

General or petroleum related market capacity refers to the development of a market system for allocating capital and commodities. A well-developed market system should be well-regulated involving a large number of players. It discovers price in an efficient and transparent way, reflecting the supply and demand, and is hard to be manipulated. In many countries, during the transition from the non-market economy to market economy, the lack of market capacity, especially in terms of laws, regulations, institutional capacity to monitor the role of market, lack qualified staff, and lack of market volume, may justify the use of NOCs by government to allocate resources and to

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[164] Noreng, Ø. (2001). The New Balance of Private and Public Interests in the Restructuring of the Petroleum Industry- a European Perspective. *The Journal of Energy and Development 25*(2), 187-202. p.192. The petroleum industry by its nature is difficult to be regulated given the fact that the petroleum industry is a vertically integrated industry with sophisticated technology and complex information, especially for an inexperienced government lack of qualified staff. United Nations Centre for Natural Resources, Energy and Transport Dept of Technical Co-operation for Development (1980). *State Petroleum Enterprises in Developing Countries*. New York: Published for the United Nations by Pergamon Press. p.5

[165] Ibid p.6

extend monitoring and administrative functions.

Petroleum related industrial capacity means the productive capacity, investment capacity, financing capacity and marketing capacity of the petroleum sector. Productive capacity emphasises on the ability of petroleum sector in reducing operational cost, and investing, financing and marketing capacities emphasises on the ability of petroleum sector in making good investment, marketing and financing decisions. By having NOCs, a country can train domestic employees with suitable skills to foster industrial capacity.[166] The effectiveness of the industrial capacity a petroleum sector could develop is highly dependent on the extent of autonomy granted to it by the government and on the effectiveness of supporting system in facilitating the capacity building. For example, the domestic petroleum sector in the FSU was relatively well equipped with productive capacity, but had poor investment, marketing and financing capacity due to lack of autonomy in these areas.

To conclude, NOC reforms are normally driven by a variety of factors as illustrated in figure 3-1, ranging from more ideological factors to the left of the diagram and more practical factors to the right.

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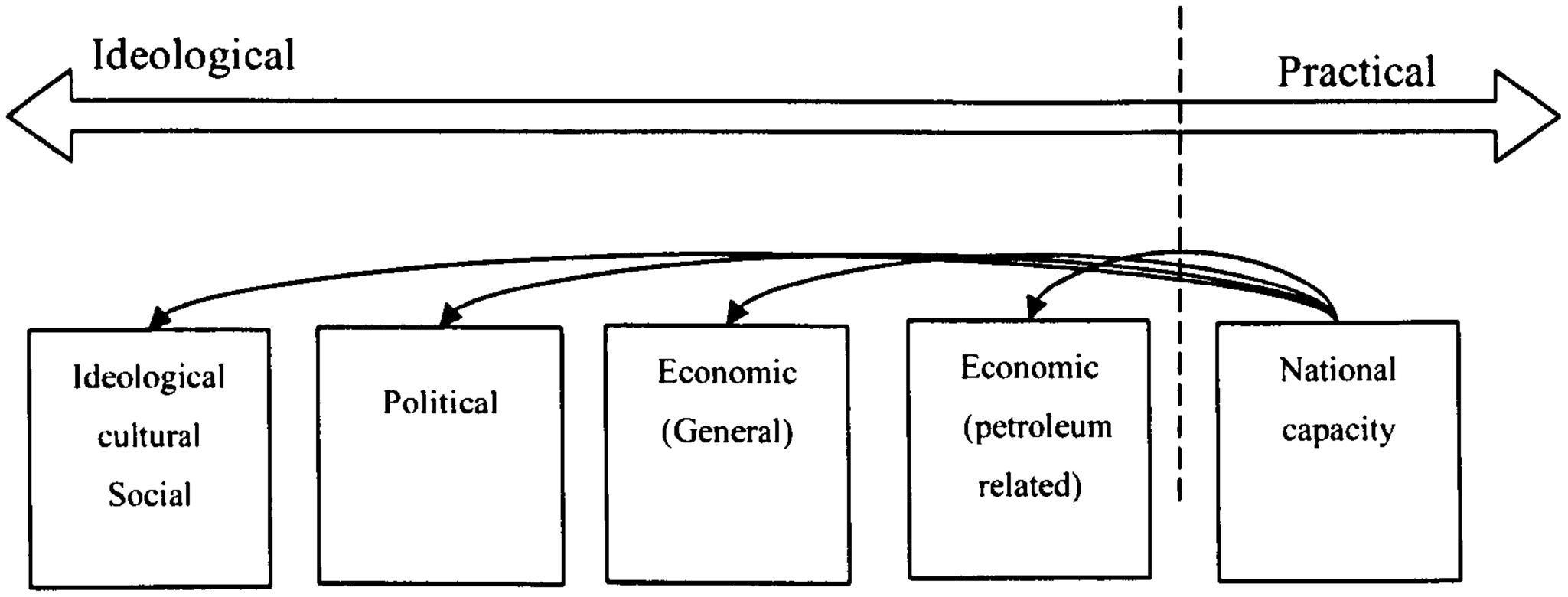
[166] Noreng, Ø. (2001). Liberalisation, Integration, and Specialisation: the Restructuring of the European Oil Industry *Journal of Energy and Development, 26*(1), 35-54. p.36. Stevens, P. (2004). National Oil Companies: Good or Bad-a Literature Survey. *CEPMLP Internet Journal (14)* Retrieved 02 April, 2008, from http://www.dundee.ac.uk/cepmlp/journal/html/Vol14/Vol14_10.pdf. p.6. United Nations Centre for Natural Resources, Energy and Transport Dept of Technical Co-operation for Development (1980). *State Petroleum Enterprises in Developing Countries*. New York: Published for the United Nations by Pergamon Press. "there are also the ideology that big is beautiful in the oil sector which driven governments to have their own NOCs when private sector lacks the capacity."

Figure 3-1 Drivers of NOC reform 2.3



3.4 The measures of NOC reforms

Due to different drivers of reforms, and also specific cultural, political, social and economic settings differ widely among countries, the reforms measures employed by governments are also diverse. The aim of this section is to examine the major elements of reform measures used by governments to enhance their regulatory framework, to liberalise their markets and to commercialise their NOCs. The thesis views NOC reforms from a broad perspective, covering all the major reforms measure that changes the relationship between government and NOCs, including reform of regulatory framework, reform of industrial structure, reform of pricing and distribution system, and reform of fiscal and financial regimes.

3.4.1 The reform of regulatory framework

The regulatory framework of a country includes the government's institutional structure in terms of regulating and governing the petroleum sector. It normally includes the cabinet of a country, general ministries such as Ministry of finance, and specific

petroleum ministries and agencies that may comprise one specialised ministry to make policies of the petroleum sector exclusively or together with other sectors such as mining and energy. It is also common practice to have an independent entity or an entity within the ministry to provide technical and professional support or regulate the enforcement of policies or collection of information.[167] The Norwegian regulatory framework is believed to have been modelled on these lines.

The core measures for reforming regulatory and administrative frameworks include the divesting of policy-making, regulatory, administrative and social functions from NOCs and to put them under relevant government ministries or independent regulators, so as to address the "multi-task effect" and "conflict of identity effect" of NOCs. According to a joint study of UNDP and World Bank statistics, during 1990s, among 49 sampled countries with upstream oil and gas sector, 31% had established an independent regulator.[168]

A successful reform of regulatory framework has to be supported by the enhancement of respective government regulatory capacity, so as to ensure the new regulatory framework functions effectively. Although it is easy to just establish new agencies or

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[167]Taverne, B. (1999). Petroleum, Industry and Governments - An Introduction to Petroleum Regulation, Economics and Government Policies: Kluwer Law International. p.92. Al-Kasim, F. (2006). *Managing Petroleum Recourses: The 'Norwegian Model' in a broad Perspective Oxford Institute for Energy Studies.* p.173. Many claims that the entity should be independent if capacity permits, as it will avoid the negative impact of petroleum ministry to manipulate information for their own benefit.

[168] ESMAP (1999). Global Energy Sector Reform in Developing Countries: a Scorecard, Joint UNDP/ World Bank Energy Sector Management Assistance Programme. p.19

transfer functions of NOCs to existing government agencies, the building up of capacity, such as drafting laws, regulations and training qualified staff, takes a long time and are of great importance for the effectiveness of reforms. This is especially true for developing countries with weak regulatory capacities.[169]

3.4.2 The reform of the industrial structure

The reform of the industrial structure of the petroleum sector includes reforms that change the nature, structure, and NOCs' mandates or domestic or international private entities operating in the petroleum sector. Measures for reforming the industrial structure are highly varied. Common measures include commercialisation and the introduction of competition. The former measure is mainly for the purpose of removing non-commercial responsibilities of NOCs in order to address the "multi-task effect" and "conflict of identity effect" of NOCs. It was often conducted as a package together with the reforms of regulatory framework as analysed in section 3.4.1. The latter measure is mainly for the purpose of putting NOCs in a competitive environment, to address the negative impact of monopoly on performance. According to the United Nation Development Programme and the World Bank study cited in the above section, during 1990s, 67% of the 49 sampled countries having upstream oil and gas sector had corporatised their NOCs.[170]

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[169] Ascher, W., & Healy, R. (1990). *Natural Resource Policymaking in Developing Countries: Environment, Economic Growth, and Income Distribution*: Duke University Press, Durham and London 1990. p.3-4, 160

[170] ESMAP (1999). Global Energy Sector Reform in Developing Countries: a Scorecard, Joint UNDP/ World Bank Energy Sector Management Assistance Programme. p.19

3.4.2.1 Commercialisation

Commercialisation is a common measure in reforming NOCs. Commercialisation is a process where non-commercial responsibilities are removed from NOCs and to be transferred to governments or other entities. The measure is normally conducted along with relevant reforms in the regulatory framework.

Most frequently, the commercialisation entails corporatisation, to remove regulatory and administrative functions from NOCs, and further commercialisation includes removal of other social and economic liabilities from NOCs. The corporatisation measure normally involves changing of legal status of an NOC from a ministry of the government into a corporation with more autonomy and a higher responsibility towards profitability. However, corporatised NOCs may still take social or economic responsibilities.

Privatisation is also a specific measure to commercialise NOCs by removing the involvement of the state in NOCs through complete or partial divestment. As has been discussed in section 2.3, governments, by nature, are not good at cost management and innovation, tasks that are better performed by commercial and private sectors.[171] Therefore, it is argued that that the private sector out-performs the public sector in keeping costs low and being innovative due to the existence of soft incentives and incomplete contracts in the public sector.[172] As a result, NOCs should be privatised to

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[171] Shleifer, A. (1998). State Versus Private Ownership. *Journal of Economic Perspectives 12*(4), 133-150.
[172] Ibid. p.137. "When assets are publicly owned, the public manager has relatively weak incentives to make investment in both cost reduction or innovates they only gets a fraction of the return."

accept capital injection from the private sector, to provide better incentives and increase the accountability of managers, and to provide them "with clearer and unequivocal targets" in order to bring in investment and operational efficiency.[173] Not all privatisation is complete. In practice, owing to its controversial nature or difficulties in privatising NOCs, many governments choose to partially privatise their NOCs by selling part of the NOCs to private players while generally retaining a dominant share.[174] In some countries, privatisation is conducted privately by striking of deals between the government and the final buyer. In others, privatisation is conducted through an open process, when NOCs are partially or fully sold through public listing.

3.4.2.2 Competition and restructure

Introduction of competition is another commonly used measure for NOC reform, particularly during the 1990s.[175] Competition is an important element of free-market ideology, on the strength of the argument that perfect competition delivers efficiency.[176] It is believed that "lack of competition is a key factor for poor performance of enterprises in developing countries' and competition brings in competence".[177] In

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[173] Stevens, P. (1998). Energy Privatisation: Sensitivities and Realities. *Journal of Energy and Development, 23*(1), 1-14.p2-3

[174] Economist. (2007). Running Just to Stand Still. *Economist 385*(8560), 77-78. Stevens, P. (1998). Energy Privatisation: Sensitivities and Realities. *Journal of Energy and Development, 23*(1), 1-14.p1

[175] Jr., H. Q. P. (2004). Institutional Designs and Regulatory Reforms in the Energy Industries. *Oil, Gas and Energy Law Intelligence, II*(3). p.386. Noreng, Ø. (2001). Liberalisation, Integration, and Specialisation: the Restructuring of the European Oil Industry *Journal of Energy and Development, 26*(1), 35-54. p.36.

[176] Parkin, M., Powell, M., & Matthews, K. (1998). *Economics* (4 ed.): Pearson Education Limited. P.286-288

[177] McPherson, C. (2003). National Oil Companies: Evolution, Issues, Outlook. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 184-204). Washington D.C.: International Monetary Fund. p.188. Aharoni, Y., & Ascher, W. (1998). Restructuring the Arrangements between Government and State Enterprises in the Oil and Mining Sectors.

contrast a competitive environment could foster realisation of the potential of an organisation and measures could also be taken to reduce cost, improve technology, managerial skills, and to make appropriate decisions on strategic and operational issues. The lack of competition is claimed to be one of the key factors for the under-performance of many NOCs, as many of them hold a monopoly over high quality reserves, exploitation rights, rights over transportation infrastructure, and domestic markets.[178] Monopoly power ensures income, and thus NOCs and their staff do not have the incentive or pressure to improve performance in such situation.

Measures for bringing in competition are highly variable in different countries. Some governments split their NOC or adjust the functions of NOCs in order to enhance competition among these NOCs. Others enhance competition by allowing domestic or international private players to participate in petroleum activities.

Natural Resources Forum, 22(3), 201-213. p.209. Stevens, P. (1998). Energy Privatisation: Sensitivities and Realities. *Journal of Energy and Development, 23*(1), 1-14. p.3. Noreng, Ø. (2001). Liberalisation, Integration, and Specialisation: the Restructuring of the European Oil Industry *Journal of Energy and Development, 26*(1), 35-54. p.36

[178] McPherson, C. (2003). National Oil Companies: Evolution, Issues, Outlook. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 184-204). Washington D.C.: International Monetary Fund. Stretton, H., & Orchard, L. (1994). *Public Goods, Public Enterprise, Public Choice: Theoretical Foundations of the Contemporary Attack on Government*: Basingstoke : Macmillan. p.92. Nicholls, T. (2005). "NOCs 1-IOCs 0." Petroleum Economist April: 6. Lack of external competition does not necessarily cause inefficiency. Competition is one of the incentives for NOCs and their staff to improve their performance but not the only incentive or motivation. Theoretically, an effective incentive mechanism, or monitor and control system may be more important than the form of monopoly or competition. For example there are companies with good cost and technology records such as Saudi Aramco who enjoy a monopoly position in Saudi Arabia. Oil industry experts said "the company is well run and efficient. Few, if any, IOCs are thought to be capable of doing a better job than Aramco when it comes to complex onshore oil projects".

3.4.3 The liberalisation of the market system

Liberalisation is the process by which government reduces its direct control in the economy and increases the autonomy of enterprises in participating in transactions as well as the role of market in allocating resources and determining prices. Competition, as discussed in the previous section, could be seen as a reflection of liberalisation from the firm's perspective, whilst liberalisation of market system could be seen from the perspective of pricing of petroleum and the rules governing flow of petroleum in an economy. The pricing system pertains to the methods for determination of prices in a country, whether by governments employing administrative means or by buyers and sellers in a free market operating in a robust regulatory environment. The distribution and allocation system comprises players and rules for allocating and distributing products, including natural gas, crude oil and oil products. The petroleum market system thus determines whether there are high barriers to entry of new players in relevant activities and whether products can be freely allocated.[179]

A liberalised and properly functioning market system provides an atmosphere conducive for efficient allocation of resources, investment and cost control and it thus a pre-requisite for commercialised NOCs to function efficiently. A liberalised market system is also critically co-related with fiscal regime. Where a government regulates the pricing system and artificially lowers or increases prices, these prices become either a

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[179] Gupta, S., Clements, B., Fletcher, K., & Inchauste, G. (2003). Issues in Domestic Petroleum Pricing in Oil-Producing Countries In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 383-415): International Monetary Fund. p.402-408

financial burden or a privilege for the oil companies. However, a liberalised market system, though a desirable goal, is very difficult to achieve in developing countries due to strong opposition from the poor and the weak administrative capacity of governments.[180]

A government regulated price system is a major barrier to the introduction of a liberalised market system for petroleum in many developing countries. In these countries, the gradual removal of subsidies is a major measure of liberalisation. Pre-requisites for the liberalisation of allocation and distribution systems include the existence of enough players qualified for petroleum-related activities and the government's capacity to collect information and to regulate the market so that the market system is not prone to manipulation.[181] In many countries, before a fully liberalised market system is ready, direct control by governments may coexist with market forces and they combine to set prices and allocate resources.

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[180] Gupta, S., Clements, B., Fletcher, K., & Inchauste, G. (2003). Issues in Domestic Petroleum Pricing in Oil-Producing Countries In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 383-415): International Monetary Fund. p.402

[181] Gupta, S., Clements, B., Fletcher, K., & Inchauste, G. (2003). Issues in Domestic Petroleum Pricing in Oil-Producing Countries In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (pp. 383-415): International Monetary Fund. p.402-408. Mayorga-Alba, E. (1995). *Deregulation and Reform of Petroleum Markets: From Monopolies to New Regulated Markets* (No. 6): The World Bank Group. Chen, S. (2006). State-Regulated Marketisation: China's Oil Pricing Regime. *Perspectives, 7*(3), 151-172. "Market solutions only wreak chaos due to the petroleum market's underdevelopment in China. When market disorder arises, the government has to resort to administrative means. To get out of this vicious cycle, the government should focus on developing the oil market".

3.4.4 The reform of fiscal and financial regimes

Reform of the fiscal regime is another major component of the reform of NOCs, which deals with the financial relationship between government and NOCs, and is a critically important part of commercialisation of NOCs. The concept of fiscal regime in this thesis is different from the conventional concepts of fiscal regime, which deals only with taxation. The fiscal regime in this thesis involves not only financial flow from NOCs to governments, such as taxation, profit submission, dividends, and other financial burdens, but also financial flow from governments to NOCs, such as capital injection, subsidy and other financial support from governments. Fiscal regime is a core incentive or disincentive in the performance of NOCs. As a result, it is a frequent target of NOC reforms.

A good petroleum fiscal regime should be transparent, fair, efficient, and stable.[182] However, it also has a high requirement for capacity of a country, especially the capacity of government to collect information and measure the performance of NOCs based on which tax is collected or fund is allocated. The government should also be well equipped to spot manipulation of accounting information by companies for tax reasons. As has been discussed in section 2.4.3, a liberalised market system is a pre-requisite for a good petroleum fiscal regime. This is because, an effective taxation system should focus on the economic rent generated, and therefore performance of NOCs has to be

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[182] Johnston, D. (2003). *International Exploration Economics, Risk, and Contract Analysis* (1st ed.). Tulsa, Oklahoma: PennWell Corporation. p.57

measured by using price that implies fair value.

To conclude, measures for reforming NOCs are focused mainly on two institutional structure aspects, namely regulatory framework and industrial structure. They are also focused on the market system and fiscal regime, which are rule-based aspects. There are complex interactions between these aspects that have been analysed in this section, including the interaction between fiscal and financial regime and market system. The above four aspects of reforms may be introduced as a package or individually, depending on the institutional setting of a country and the interplay of vested interest groups.

3.5 The framework for analysing NOC reforms

The aim of this section is to crystallise the analytical framework that will be employed for analysing the NOC reforms from the perspective of the relationship between NOCs and governments. This will be applied in the China case study in chapters 4-7 and could also be applied to analyse studies of general NOC reforms in other countries. The framework provides mechanisms for analysing three distinct elements of the process of NOC reforms, namely, the drivers, the measures and effectiveness.

Analysis of the drivers of reforms would entail, in the first step, an analysis of a range of ideological and practical factors, as mentioned in section 3.3. The second step will involve an analysis of the implications of these drivers on the government and the

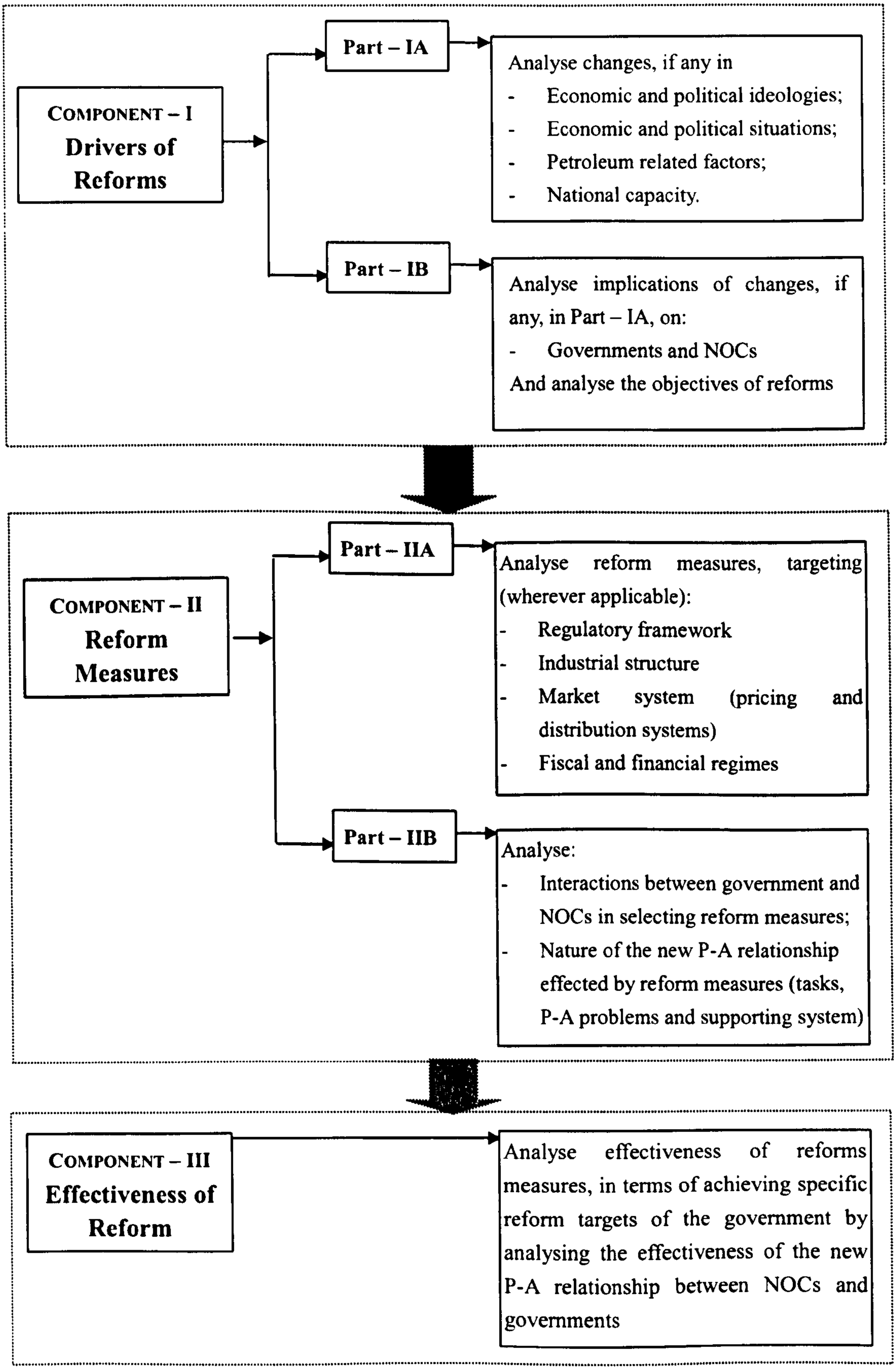
NOCs and analyses the major objectives of government in reforming NOCs.

The second component of the analytical framework is designed to analyse the measures adopted by governments to reform NOCs. This component is divided into two principal steps, the first involving an analysis of the regulatory and industrial structures, the market structure including pricing and distributing systems, and the fiscal and financial regimes. Thereafter, the new P-A relationship between governments and NOCs established by NOC reforms are to be examined in the next step.

The third component of the analytical framework is designed to analyse the effectiveness of the reform measures examined in the previous step. Due to the difficulty of measuring the effectiveness of NOC reforms using sufficient quantitative date, the thesis, as discussed in chapter 1 and 2, measures the effectiveness of reforms by examining the effectiveness of the new relationship between government and NOCs established by reforms.

A pictorial representation of the design of the analytical framework is shown in figure 3.1

Figure 3-1 Framework for the analysis of NOC reforms in China



4 NOC REFORMS IN CHINA-THE BACKGROUND STAGE (1949-1978)

This chapter analyses the evolution of the petroleum sector in China from 1949 to 1978, when the modern petroleum industry in China was established and a new institutional arrangement was set up. It served as the background for later analysis of the creation of the NOCs and reforms of the NOCs in chapters 5-7.

This chapter first analyses the general background of the petroleum sector during this period by looking at the wider political, social and economic context of the country and the resource base and productivity of the petroleum sector. This is followed by an introduction to the institutional arrangement established during this stage, including the regulatory framework, the industrial structure, the pricing and distribution systems, and the P-A relationship between the government and the petroleum sector. The chapter concludes with an evaluation of the relationship established during this stage.

4.1 The general background

This section deals with major background factors between 1949 and 1978, including Chinese foreign relations, the domestic political and economic context, the nature of the petroleum sector in terms of reserve, productivity and role in the national economy, and the national capacity, both at the outset as well as during the process of development. The period represents the evolution of the political, social and economic systems and situations in China from the nascent stage. State capacity in these spheres was very

weak and the national situation as well as the process of evolution was chaotic. The modern petroleum sector, which barely existed in the beginning of this stage, was initiated and developed during this period. These economic, social and political settings strongly influenced the structure and nature of the petroleum sector, and the way the government regulated it, refereed as the institutional arrangement in the thesis.

4.1.1 The foreign relations

As a newly established socialist republic in 1949, the People's Republic of China ("PRC") faced an extremely hostile external environment. It was shunned by most of the developed countries and there were barely any diplomatic and economic relations with them. For example, the Paris-based Coordinating Committee composed of the United States and its allies, which controlled exports to communist countries, banned the export of advanced equipment and technologies to China during this period'.[183] The former Soviet Union was the major ally of China in the beginning of 1950s, providing it with financial aid and technological support, and also contributed political and economic ideas for governing the country. However, even this sole source of support was unstable as the two respective leaders of governments had some critical ideological differences. The relationship between the two nations eventually worsened and finally, in 1960, the Soviet Union withdrew its aid as well as advisors from China, resulting in an abrupt breakdown of the relationship. China was left with very little international

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[183] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.173

assistance, thereby compelling it to pursue self-sufficiency.[184]

4.1.2 The political background

The political system of governance introduced in the country, though theoretically sound, remained practically weak in as much as Chairman Mao Zedong (Chairman Mao) dominated all core political and economic decision-making due to his great control over the party, and iconic status among the people. The political environment often verged on being unstable. It was characterised by frequent clashes of ideas and thus instability in the composition of the top leadership.

The single party political system comprised of four corresponding levels in the government and party at the central, provincial, city or county and local (township or village) levels. The structure of the government was similar to that in the Soviet Union, with the State Council being the highest government body with subordinate commissions and Ministries. Most of these commissions and ministries had their subordinate branches all over the country.[185]

The organisation of the government and the party in corresponding levels presented the party with ultimate authority over their government counterparts.[186] As a consequence,

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[184] Morton, W. S. (2004). *China: Its History and Culture*. OH, USA: McGraw-Hill Companies. p.210. Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.172

[185] Lieberthal, K. (1995). *Governing China, from Revolution through Reform*. New York, London: W.W.Norton and Company, Inc. p.81

[186] Due to the nature of the country's political system with one dominant leading political party, the term "the

the party usually held the real power throughout the whole political system except during the Cultural Revolution period (1966-1976).[187] Furthermore, in practice, political power was highly centralised in the hands of Chairman Mao, giving him a dominant say in the country's political and economic policies.[188] Chairman Mao from time to time bypassed the Party, the control of which lay with Vice Chairman Liu Shaoqi[189], who had economic ideologies different from Chairman Mao, as will be discussed in the following paragraph.

Despite the dominant influence of Chairman Mao, conflicts erupted from time to time between him and other leaders such as Vice Chairman Liu Shaoqi and Deng Xiaoping[190]. Chairman Mao placed emphasis on the political exigencies, on upholding social, political and economic ideologies, and on measures perceived to place power in the hands of peasants and workers. Other leaders, though subservient to these ideologies, argued for increasing the relative focus on the economic development of the country. As a result, massive governmental programmes with short politicised targets were carried out frequently across the country. Some of these campaigns played a positive role in enhancing economic development, but a majority of them turned out to be mere diversion of scarce resources and distorted the national economy. Examples include the

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party" and "the government" in this thesis are used interchangeably unless otherwise specified.

[187] Morton, W. S. (2004). *China: Its History and Culture*. OH, USA: McGraw-Hill Companies. p.209

[188] Lieberthal, K. (1995). *Governing China, from Revolution through Reform*. New York, London: W.W.Norton and Company, Inc. p.62, 79

[189] The first Vice Chairman of the Chinese Communist Party from 1945-1966.

[190] The General Secretary of the Communist Party between 1956-1966

"Great Leap Forward" and the "Cultural Revolution".[191]

4.1.3 The economic background

China's economic foundation was extremely weak during this period as a result of preceding a long lasting imperial system, a close door policy and years of war. All the new leaders, including Chairman Mao, emphasised the importance of economic development and industrialisation in restoring the national economy.[192] However, as discussed in sections 4.1.1 and 4.1.2, the hostile international environment and unstable domestic political situation and the resultant actions constantly distorted or hindered economic development.[193] For example, the failed "Great Leap Forward" campaign from 1958 to 1960 caused severe economic recession. However, when Liu Shaoqi and Deng Xiaoping took an upper hand during 1960-1965, the economy managed to recover well from the depression. This trend is shown in figure 4.1 and 4.2 on the Gross

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[191] AllRefer.(1987). China. Retrieved 10Apr, 2007, from http://reference.allrefer.com/country-guide-study/china/. "The Great Leap Forward is a militant approach toward economic development aiming at accomplishing the economic and technical development of the country at a vastly faster pace and with greater results. Among the Great Leap Forward's economic consequences were a shortage of food (in which natural disasters also played a part); shortages of raw materials for industry; overproduction of poor-quality goods; deterioration of industrial plants through mismanagement; and exhaustion and demoralization of the peasantry and of the intellectuals, not to mention the party and government cadres at all levels." ."The Cultural Revolutionary was launched in 1966 by Chairman Mao under the support of "Gang of Four" to purge capitalist and bourgeois in The Communist Party. To confront the party machine led by Liu shaoqi and Deng Xiaoping. Mao resorted to the People's Liberation Army and Youth in the country, who were mobilised by Mao as Red Guards"

[192] Yuan, B.-H. (1999). The Review of a Few Issues of Socialism Economic of China in the Last 50 Years (In Chinese). *The Research of Modern China History, 5-6*. p.2. Lieberthal, K. (1995). *Governing China, from Revolution through Reform*. New York, London: W.W.Norton and Company, Inc. p.60-64. Chiu, B., & Lewis, M. K. (2006). *Reforming China's State-Owned Enterprises and Banks*. Cheltenham, UK.Northampton, MA, US: Edward Elgar. p.22

[193] Naughton, B. (2006). *The Chinese Economy: Transitions and Growth*. Cambridge, Massachusetts; London, England. The MIT Press. p.62-79. Influenced by the unstable political system, the economic system was also very unsteady during this stage, with direction of the national economy, the arrangement of national budget and the economic policy constantly being targets of political arguments and was under constant adjustments

Domestic Production ("GDP") figure of the country.[194]

Figure 4-1 GDP at current prices (1952–1983)

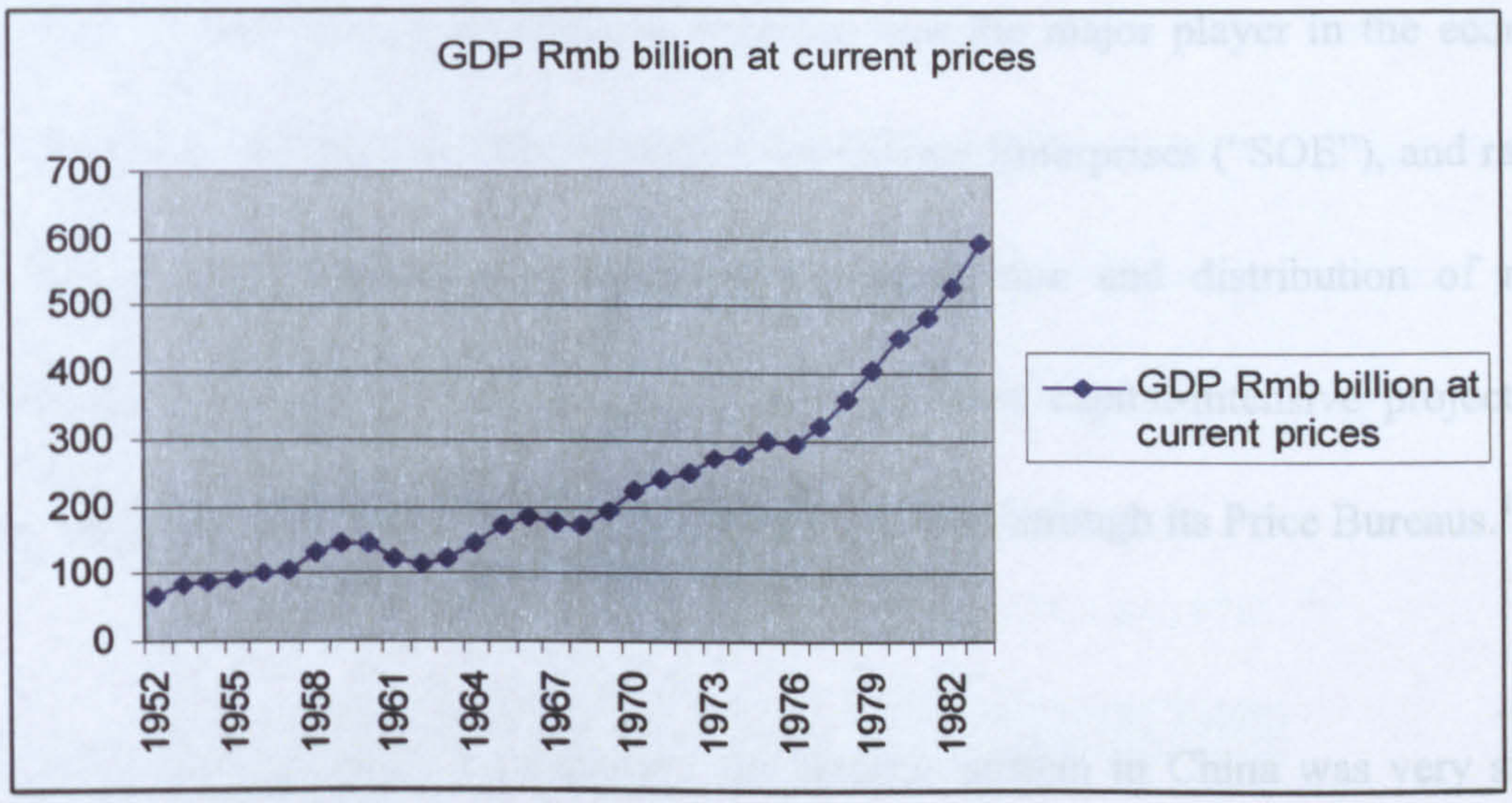
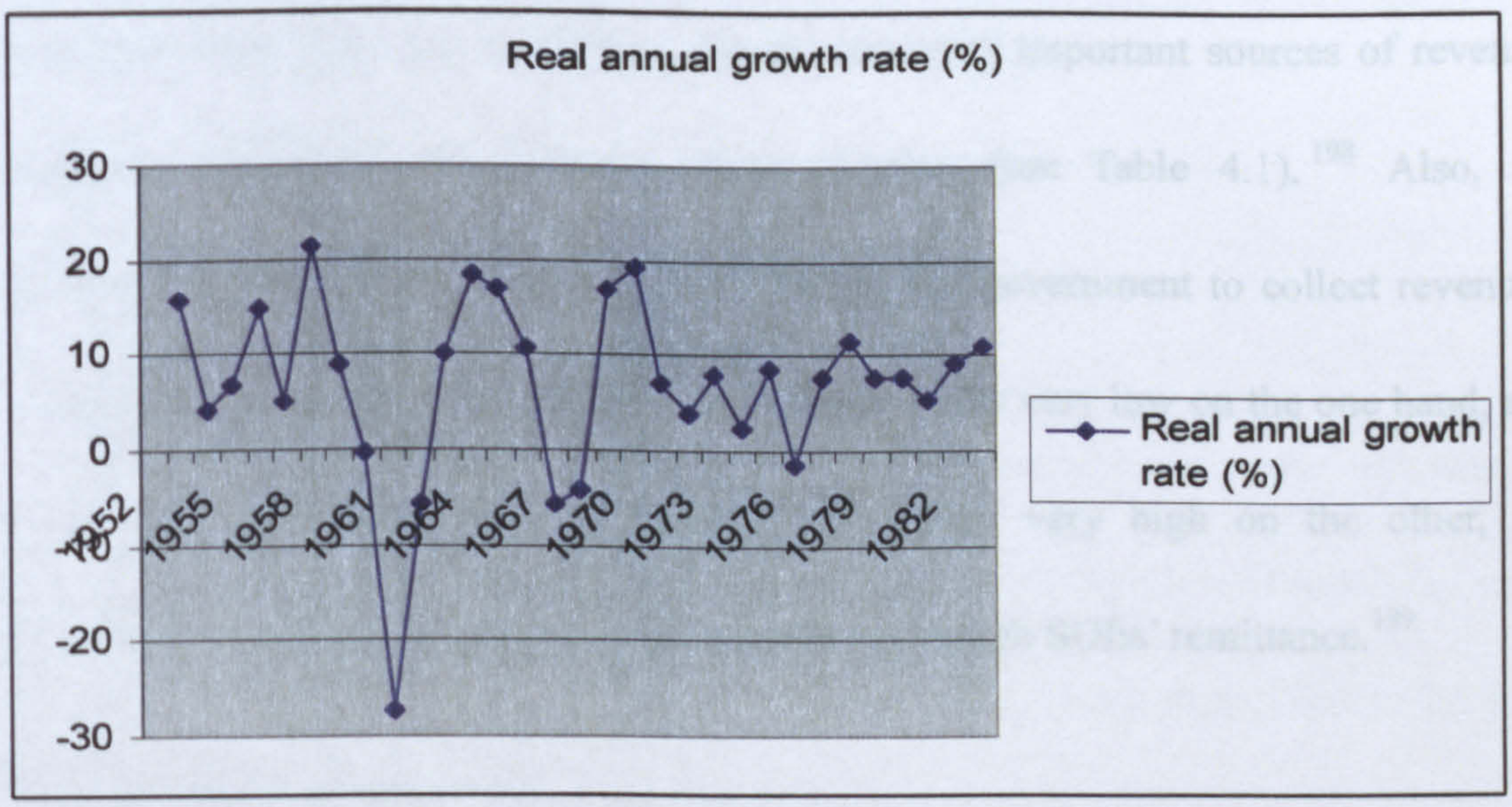


Figure 4-2 Real Annual Growth Rate of GDP (1952-1983)



During this stage, a soviet-style, highly centralised economic system was established in the country. It was characterised by "public ownership of industry, centralised planning

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[194]NBS. (2006). GDP Growth 1952-2006 (in Chinese). In *China Statistical Yearbook 2004*: National Bureau of Statistics, China.

system on allocation of resources and setting prices, a centralised and passive banking system, and a development strategy emphasising industrial, especially heavy industrial growth".[195] Under this system, the government was the major player in the economy and literally owned the economy through State Owned Enterprises ("SOE"), and ran the economy. It also "guided and organised the production and distribution of major commodities as well as the construction of significant capital-intensive projects".[196] Moreover, prior to 1978, it set nearly all prices in China through its Price Bureaus.[197]

Due to the lack of regulatory capacity, the taxation system in China was very simple during this stage and played only a minor role in collecting revenues. Instead, remittances from state and collective sectors were very important sources of revenue, sometimes surpassing the revenues from taxation (see Table 4.1).[198] Also, the administrative price system was one tool used by the government to collect revenues. By setting prices of raw materials and agricultural goods very low on the one hand, and the prices of industrial products produced by SOEs very high on the other, the government was able to secure its revenue income through SOEs' remittance.[199]

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[195] Lieberthal, K. (1995). *Governing China, from Revolution through Reform.* New York, London: W.W.Norton and Company, Inc. Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press. p.15

[196] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.64

[197] Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press. p.24

[198] Ibid. p.113

[199] Naughton, B. (2006). *The Chinese Economy: Transitions and Growth.* Cambridge, Massachusetts; London, England, The MIT Press p.304-305. "'SOEs had a high profit margin and they transfer almost all their profit to the state. In 1978, SOEs profit accounted 14% of overall GDP."

It was the government rather than the SOEs or the banking system that made decisions on capital investments of enterprises and monitored their implementation. The state provided almost all capital needed by SOEs as part of the "Big Push" industrial investments (funds for investment in economic development comprised 50% of government budgets during this stage).[200] The financial sector was passive and played only a minor role in long-term investment. Instead, they provided mainly "short term financing for inventories, mainly to commercial sectors".[201]

Table 4-1 Sources of Revenue by Type (1952 to 1978) [202]

(Unit: % of total revenue)

	Tax Revenue	Enterprises Incomes
1952	56.18	32.93
1957	51.06	47.55
1965	38.65	49.99
1970	38.99	52.55
1975	42.59	42.32
1978	41.63	45.85

4.1.4 The nature of the petroleum sector

The nature of the petroleum sector changed significantly in terms of reserve, productivity and role in the national economy during this stage. It was relatively small and trivial during the 1949- 1963 period but grew significantly from 1963 to 1978, as evidenced by figure 4.3, which shows the domestic oil production.

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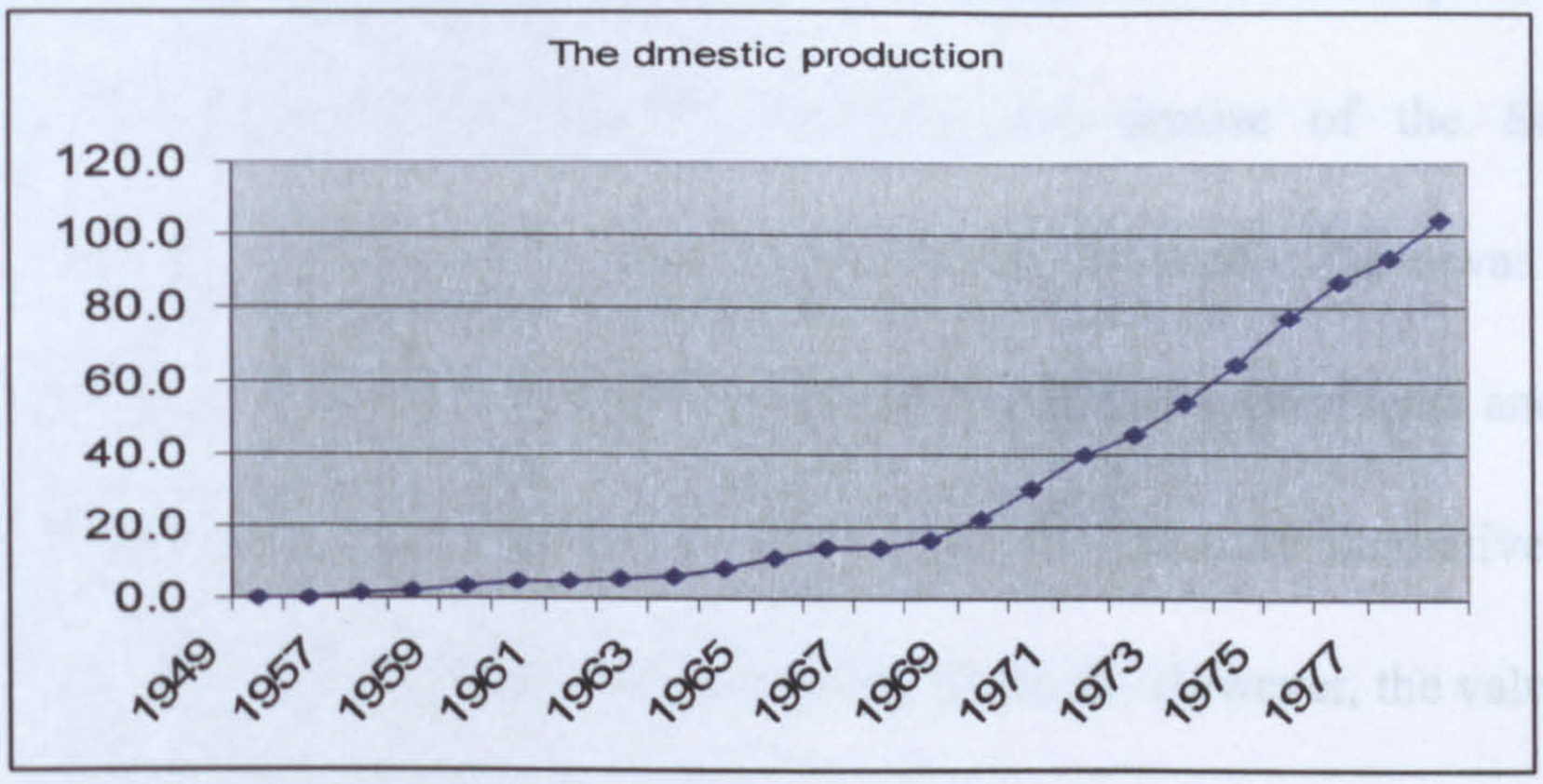
[200] Ibid. p.21

[201] Naughton, B. (2006). *The Chinese Economy: Transitions and Growth*. Cambridge, Massachusetts; London, England The MIT Press p.304-305

[202] Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press. p.113

Figure 4-3 The domestic oil production (1949-1978)[203]

(Unit: Million tons)



4.1.4.1 A stage of growth under the policy of fostering national capacity (1949-1963)

Prior to 1963, China was keen and desperate to foster a domestic petroleum sector from almost scratch. It barely had a domestic petroleum sector in 1949, having an annual domestic crude oil production of only 120,000 tonnes, and a refining capacity of 170,000 tonnes,[204] with roughly 90% of the total territory yet to be explored.[205] Thus, it relied heavily on imported oil, mainly from FSU.[206]

The country had an urgent need for a domestic petroleum sector for several reasons. Firstly, the country needed oil to fuel its economy and to satisfy military needs. The

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[203] CNPC internal data, 2006, Finance Department

[204] AllRefer.(1987)."China." Retrieved 10Apr, 2007, from http://reference.allrefer.com/country-guide-study/china/. Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.7

[205] Yan, X., & Yang, J. (1999). *Fuelling the 21st Century China: the Report on Improving the International Competitiveness of Chinese Petroleum Industry (In Chinese)*. Beijing: The Enterprises Management Publishing House. p.170, 185

[206] Zhang, L. (1999). The Adjustment of the Strategy of China's Energy Supply (In Chinese). *China Energy,3*. p.13. Nolan, P. (2001). China and the Global Business Revolution, Palgrave. p.433 "In 1959 60% of china's oil consumption was imported"

latter was felt particularly crucial for national security by the Chinese government due to the hostile international environment and perception of military threat from neighbouring countries like India.[207] Secondly, the demise of the Sino-Soviet relationship cut the only major source of imported oil.[208] Thirdly, there was an urgent need for foreign currency to import advanced technology and equipments and to repay the heavy debt owed to the Soviet Union in the 1960s.[209] The only alternative source of hard currency was export of food and agricultural products. However, the value of these products was low and there was the issue of domestic food security. The country was plagued by famine and casualties from starvation in the 1960s, which could in turn threat the political survival of the party and the government if it relied too much on foreign currency generated from food exports.[210]

Thus, driven by the urgency to increase domestic production of oil and an optimistic assessment of potential domestic reserves, the government placed the sector in a highly important position. In 1953, Chairman Mao stressed the importance of the petroleum industry by establishing it as a high priority industry together with few other industries such as coal and water.[211] The government also put significant efforts into promoting

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[207] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.172

[208] Ibid. p.177. Oil import from USSR reduced from 2.96 million tons to 1.41 million tons from 1960 to 1963

[209] Li, J. (2006). The Truth of Three Year Famine (In Chinese). Retrieved 12 Apr, 2007, from http://www.phoenixtv.com/phoenixtv/83931275940855808/20060505/790687.shtml.

[210] Ibid.

[211] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.7. The so called "xian xing gong ye" in Chinese. Yan, X.-C. (1998). *The Grand Restructure of the Chinese Petroleum Industry (In Chinese)*. Beijing The Petroleum Industrial Publishing House. p.9

exploration and production, and fostering domestic industry.[212] This policy led to a few "massive campaigns"[213] and resulted in significant discoveries and rapid development of production capacity and infrastructure.[214] By 1963, the domestic production of crude oil had increased to 6.48 million tons from 120,000 tons in 1949.[215]

4.1.4.2 The petroleum sector as a special agent of the government (1963-1978)

China attained self-sufficiency and also became a modest exporter of oil during the 1960s and 1970s when oil production increased from 6.48 million to 104.1 million tons from 1963 to 1978 as illustrated in figure 4.4.[216] The industrial capacity of the petroleum sector also enhanced significantly as it had accumulated a substantial amount of capital, human and technological resources, as well as managerial skills through several rounds of massive campaigns. This provided the sector with the capacity to address the wider economic and political challenges facing the government, which had very few alternative sectors to rely on.

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[212] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.172. Lieberthal, K. (1995). *Governing China, from Revolution through Reform*. New York, London: W.W.Norton and Company, Inc. p.76

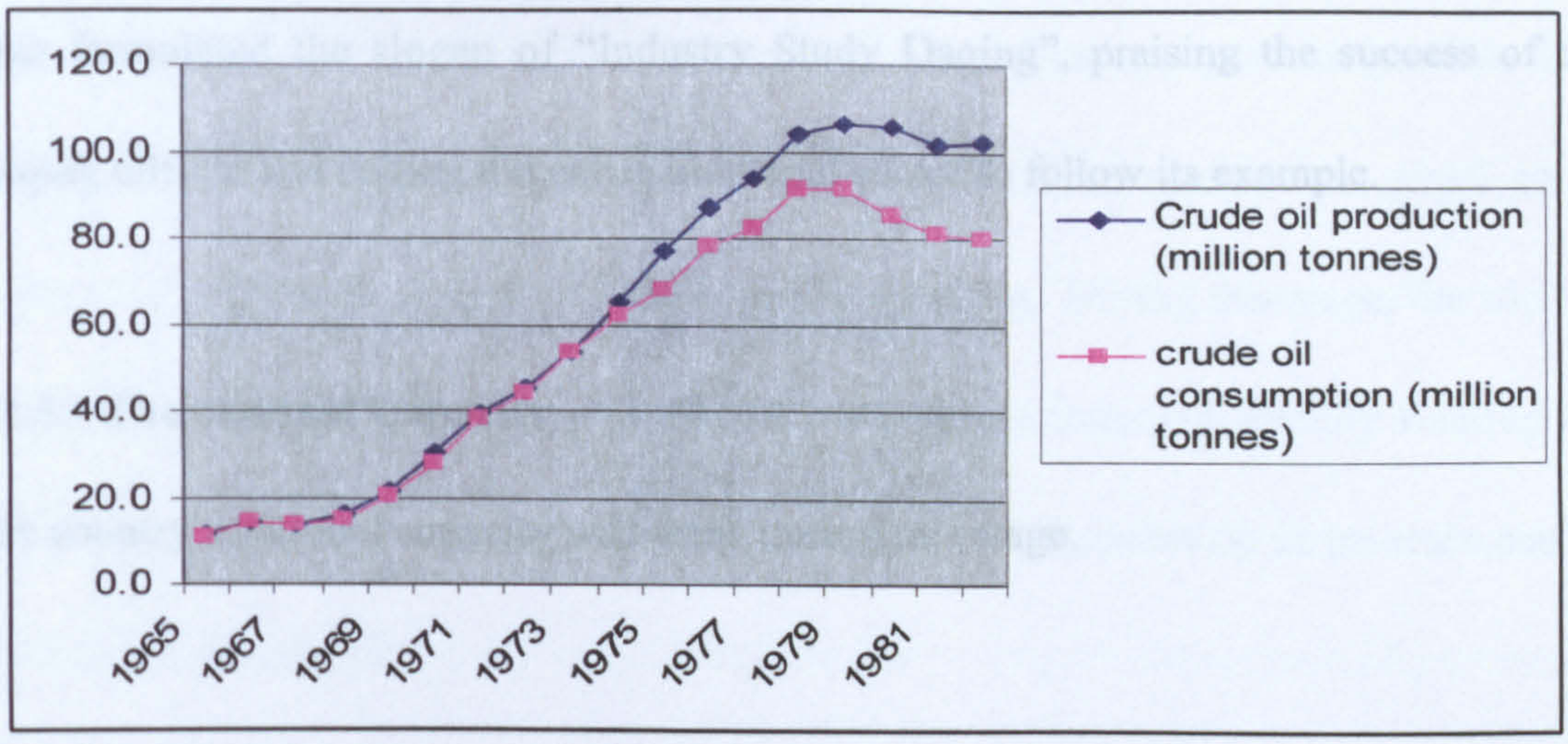
[213] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.8. "The massive campaigns was a special way organised by the government to use intensively resources such as capital, human recourses, equipments and other core commodities in order to booster the petroleum reserve and production of the country. The most notable one was Daqing oil Campaign, where not only large number of technicians (2000) was deployed from other oilfields to support Daqing, but also 30,000 personnel from the People's Liberation Army were transferred to the site. The production in the oilfield increased quickly. In 1959, large amount of commercial reserve was found in the oil field."

[214] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.169-175. "Air freight was not highly developed in China in the late 1950s and its use in the oil industry highlighted the priority which the government had clearly assigned to this effort"

[215] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.175

[216] PetroChina Internal sources, 2006

Figure 4-4 The production and consumption of the petroleum (1965-1983)



Economically, oil surpassed other fuels and became the vital fuel of the country, as other energy sectors were easily disturbed by political campaigns. For example, the coal industry was severely disrupted during the "Great Leap Forward" campaign in early 1960s and during the Cultural Revolution period from 1966-1976.[217] Accordingly, the government launched an "oil for coal" project to promote the use of oil to substitute coal.[218] The importance of the petroleum sector also increased incidents of political leaders vying to gain control over the sector. For example, in 1965, Chairman Mao promoted Yu Qiuli, who headed the Ministry of Petroleum, to additionally take charge of the third Five Year plan, bypassing the authority of the State Planning Commission (SPC). The petroleum sector was also used as an effective tool in political propaganda

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[217] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.172. "This was because the operations of coal SOEs, where most of them near large cities and could not avoid the severe impact of social chaos. Most of the oilfields were located in remote region and were far away from central cities where the chaotic situation was out of control."

[218] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.8

by the Chinese leaders. To reinforce his ideological values in the country, Chairman Mao formulated the slogan of "Industry Study Daqing", praising the success of the Daqing oilfield and calling the entire industrial sector to follow its example.

4.1.5 The national Capacity

The country's national capacity was weak during this stage.

In terms of regulatory capacity, most of its government officers did not have proper education and had little experience in regulating the economy. The country had limited or no historical experience in regulating a socialism economy, since prior to this, the country was largely governed by feudal and imperial systems, lasting for more than 2500 years.[219] Thus the regulatory structure had to be established from the scratch and hence was in its infancy during this stage.

In terms of industrial capacity, the country was weak on technology and skilled labour in the beginning of this period. The total labour force in the oil industry comprised only about 10,000 people in 1949, with a mere 20 people as skilled technical staff.[220] However, the situation was largely enhanced since mid 1960s as a result of large inputs by the government.

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[219] Kynge, J. (2007). China Shakes the World : the Rise of a Hungry Nation. London: Phoenix.
[220] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.8

The market in the country was also in its formative stage. Prior to this, the feudal system existed in the country for thousands of years. Peasants practicing subsistence farming accounted for almost 90% of the population. The market was small and a merchant culture was suppressed by rulers of the country. During this stage, the country adopted the Soviet Style economic model, with the government literally running the economy, allocating goods and setting prices. There was almost no large-scale market mechanism developed.

To conclude , China was at a special stage facing challenges in terms of hostile foreign relationships, threats to national security, constant political struggle and instability, and weak economic and institutional capacity. The petroleum sector played a significant role in the Chinese government's response to these challenges, in terms of delivering oil, generating foreign currency, as well as providing political patronage and social services. A Soviet style autocratic political system and a socialist economic system were also established in the country during this stage. These systems had a great influence on the way the government managed the petroleum sector. The above factors largely influenced the institutional arrangement of the petroleum sector established during this stage as will be analysed in more detail in the next section.

4.2 The institutional arrangement

The main aim of this section is to analyse the institutional arrangement for petroleum sector established during this stage under the influence of the background factors

introduced in the previous section.

4.2.1 The regulatory framework

Largely influenced by the Soviet style economic system, the regulatory framework of the petroleum sector was highly centralised with dominant government control present, through various general ministries, and petroleum "line ministries". The regulatory framework of the petroleum sector (see figure 4.5) contained three types of government commissions and ministries, namely, comprehensive commissions that dealt with general economic issues, such as State Planning Commission ("SPC") and State Economic Commission ("SEC"), the general ministries that dealt with general issues, such as the Ministry of Finance ("MOF"), and narrowly focused "line ministries" that dealt with the petroleum issues, such as the Ministry of the Petroleum Industry ("MPI"), which took different forms and names at different points in time (Table 4.2)[221]. Through this system, the government was able to own all assets of the sector, to retain tight control over planning, investment, production level of the sector, pricing and distribution of petroleum produced by the sector, and to control the financial resources of the sector by collecting all the profit generated by the sector.[222] It also provided capital, equipment, personnel and other core requirements to the industry.[223]

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[221] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.63-134. To avoid confusion, all these industry will be referred to as MPI unless otherwise specified.

[222] Ibid. p.175

[223] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.158. Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.70

Figure 4-5 The regulatory and industrial framework of the petroleum sector (1949-1978)

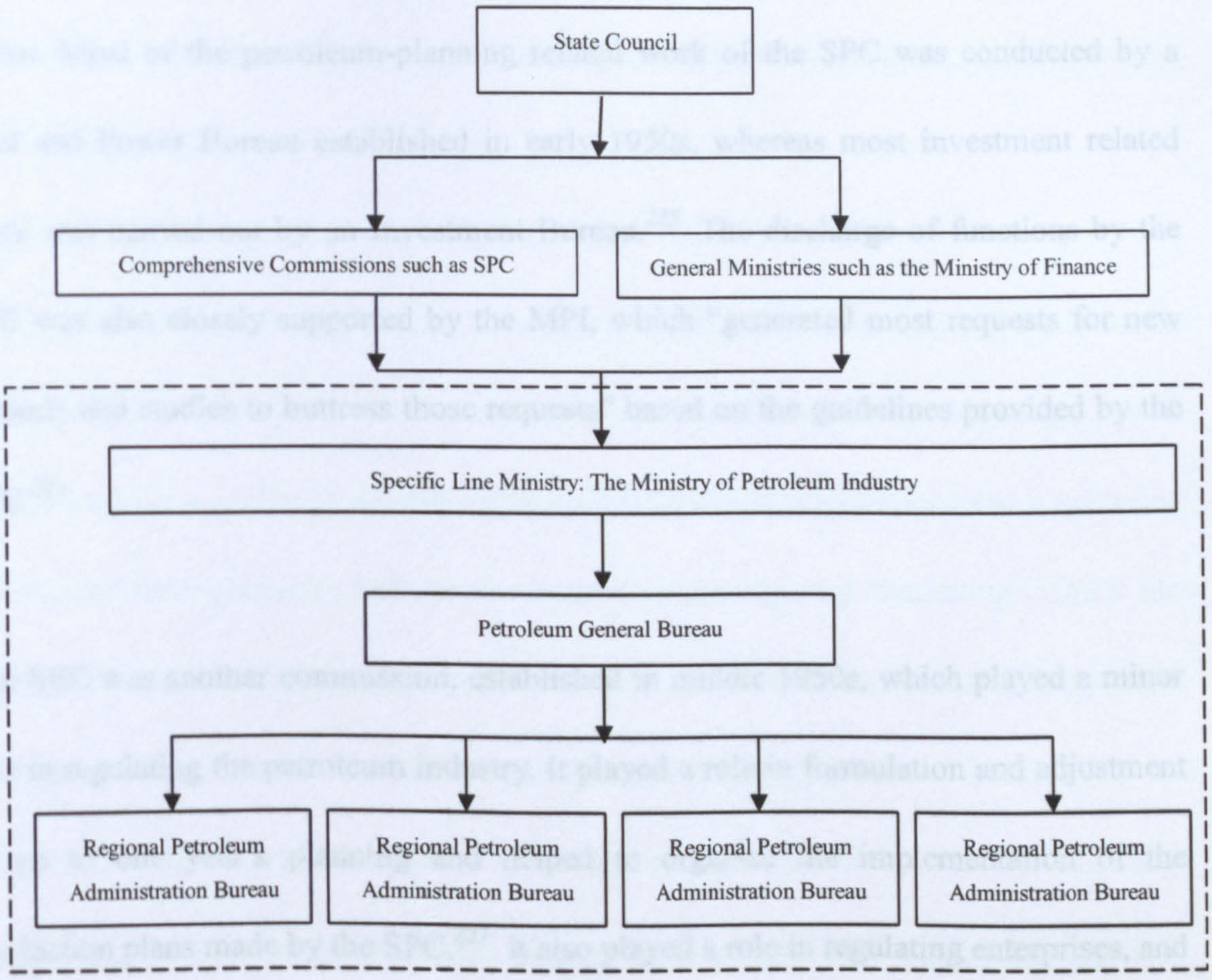

Table 4-2 The evolution of the specific Petroleum Ministry (1949-1978)[224]

Year	Ministry
1949	Ministry of Fuel Industry
1955	Ministry of Petroleum Industry
1970	Ministry of Fuel and Chemical Industry
1975	Ministry of Petroleum and Chemical industry
1978	Ministry of Petroleum Industry

The SPC was the dominant body in assisting government to regulate the petroleum sector. It formulated long-term and medium term investment plans, production plans,

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[224] CNPC. (2007). The History of CNPC (In Chinese). Retrieved 10 April, 2007, from http://www.cnpc.com.cn/CNPC/gsjs/fzlc/

approved large projects, set the prices for oil and gas, and designated the allocation plans for commodities needed by the petroleum sector and the oil produced by the sector. Most of the petroleum-planning related work of the SPC was conducted by a Fuel and Power Bureau established in early 1950s, whereas most investment related work was carried out by an Investment Bureau.[225] The discharge of functions by the SPC was also closely supported by the MPI, which "generated most requests for new projects and studies to buttress those requests" based on the guidelines provided by the SPC.[226]

The SEC was another commission, established in middle 1950s, which played a minor role in regulating the petroleum industry. It played a role in formulation and adjustment of up to one year's planning and helped to organise the implementation of the production plans made by the SPC.[227] It also played a role in regulating enterprises, and in technology and energy conservation policy of the country.[228]

The MOF was the major government agency in charge of the financial relationship between the government and the petroleum sector. It played a vital role in the design and implementation of the fiscal policy and finance management of the petroleum sector.

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[225] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.70

[226] Ibid. p.66-67, 88

[227] Donnithorne, A. (1964). China's Economic Planning and Industry. The China Quarterly, 17(111-124). p.112 "In addition to the SPC and SEC, there was also planning organs established within the Ministries and different levels governments to exert a double check of national planning".

[228] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.72

The Ministry decided the budgetary allocation received by the petroleum sector from the government. It also designed fiscal policy and collected revenue and profit from the petroleum sector. The Ministry worked closely with the MPI and many policies were a product of their negotiations.[229]

The MOF was also responsible for general accounting principles and standards in the country. China employed a Soviet style accounting system during this stage, which emphasised more on the production aspect of an enterprise's operations and overlooked other commercial factors such as investment, financing and marketing, which are important activities of an enterprise within a market environment. Furthermore, different industries and sectors followed different accounting practices. Even within the same sector, there were instances of enterprises with different size and different ownership structure having different accounting practice. This segmented approach made it nearly impossible to extract useful accounting information to measure the performance of enterprises and to benchmark them with each other. This was also the case of the petroleum industry. For example, one of the most important accounting standards, the depreciation policy was designed and regulated by the MPI.[230]

The MPI was the specific ministry in charge of the operational activities of the petroleum sector, to enforce investment and production plans drafted by the government,

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[229] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.112

[230] Zhou, M., Lu, L., & Chai, S. (2005). *Accounting and Information System (In Chinese)*. Beijing: Commercial Publishing House. P.10

and to regulate the operational entities, being the Petroleum Administrative Bureaus ("PABs"), within the petroleum sector according to government regulations and policies. It therefore was assigned with operational and regulatory roles. It coordinated with the government agencies in formulating and implementing petroleum policies, and in carrying out operational functions. The major operational task for the sector was to conduct exploration, development and production of oil in order to meet the production targets set by the government. It planned campaigns and organised human and material resources to support them. It undertook and co-ordinated the production, transportation and marketing of oil and oil products based on the overall national plan set out by the SPC. It allocated funds from the government to its subordinate PABs. In addition to the operational functions, the Ministry also supported the regulatory functions of the government and other ministries and agencies by providing information and by drafting policy proposals.[231]

The above regulatory framework applied from 1949 to 1966. During the "Cultural Revolution" from 1966 to 1976, the party systems were paralysed to a large extent, so did the government system. A special temporary regulatory framework characterised by tight military control was put into force by the central government to stabilise the petroleum sector. Several thousand soldiers were deployed at the oilfields from 1967 to 1971. This measure effectively helped the petroleum production to continue to grow, at

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[231] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.77

an average rate of 18.6% until 1978, and exceeded 100 mn tones during that year.[232]

4.2.2 The industrial structure

As has been discussed in the preceding section, the specific "line ministry" took operational as well as regulatory roles. As a result, the petroleum sector was almost synonymous with the MPI. Despite some cooperation with foreign experts in offshore exploration and production, the ministry and its subordinate bureaus were the sole operators inside the country and held exclusive access to all domestic reserves. The production functions of the ministry were discharged mainly by PABs, which were one level lower than the Ministry (see Figure 4.5). These PABs were fully owned state entities established in the principal producing regions and reported directly to the petroleum ministry.[233]

In addition to the productive responsibilities, PABs also undertook social responsibilities through a special "self contained" model. This model was initially developed in Daqing, the largest oilfield in China, located in the remote and under-populated north eastern China, during a "massive campaign". It was adopted by most oilfields afterwards as an effective model.[234] Under the model, PABs provided

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[232] Yan, X.-C. (1998). *The Grand Restructure of the Chinese Petroleum Industry (In Chinese)*. Beijing The Petroleum Industrial Publishing House. p.11

[233] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.70

[234] Interview of a former finance officer of the Ministry of Petroleum Industry in Beijing in 2006. Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.4. Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.76-77. "In 1958, exploration in the Daqing declared some commercial oil reserve. However, the withdrawal of Soviet expert made it extremely difficult to

technological services, engineering and construction (see figure 4.6), infrastructure and equipment, and the whole welfare system required by the workers living such as "agriculture, crop processing, housing construction, heating system, hotels, restaurants, kindergarten, schools, and hospitals".[235] For some PABs, the whole city was centred on the oil industry and the governor of the city was also the head of the oil administration bureau. PABs not only operated and maintained public infrastructure such as water supply, power supply, road, transportation and lighting, but also ran police stations, procurators and courts. The petroleum sector provided much wider range of social and supporting services than normal SOEs, due to the often remote locations of most PABs where there was no social infrastructure to rely on.

The major measures used by MPI to manage PABs were direct control of production, marketing, and financing activities of PABs. There was very little autonomy left to PABs. In addition to normal direct administrative measure to control PABs, there was one more layer of mechanism to exert monitoring and control over PABs through the party system, as shown in Figure 4.6.[236]

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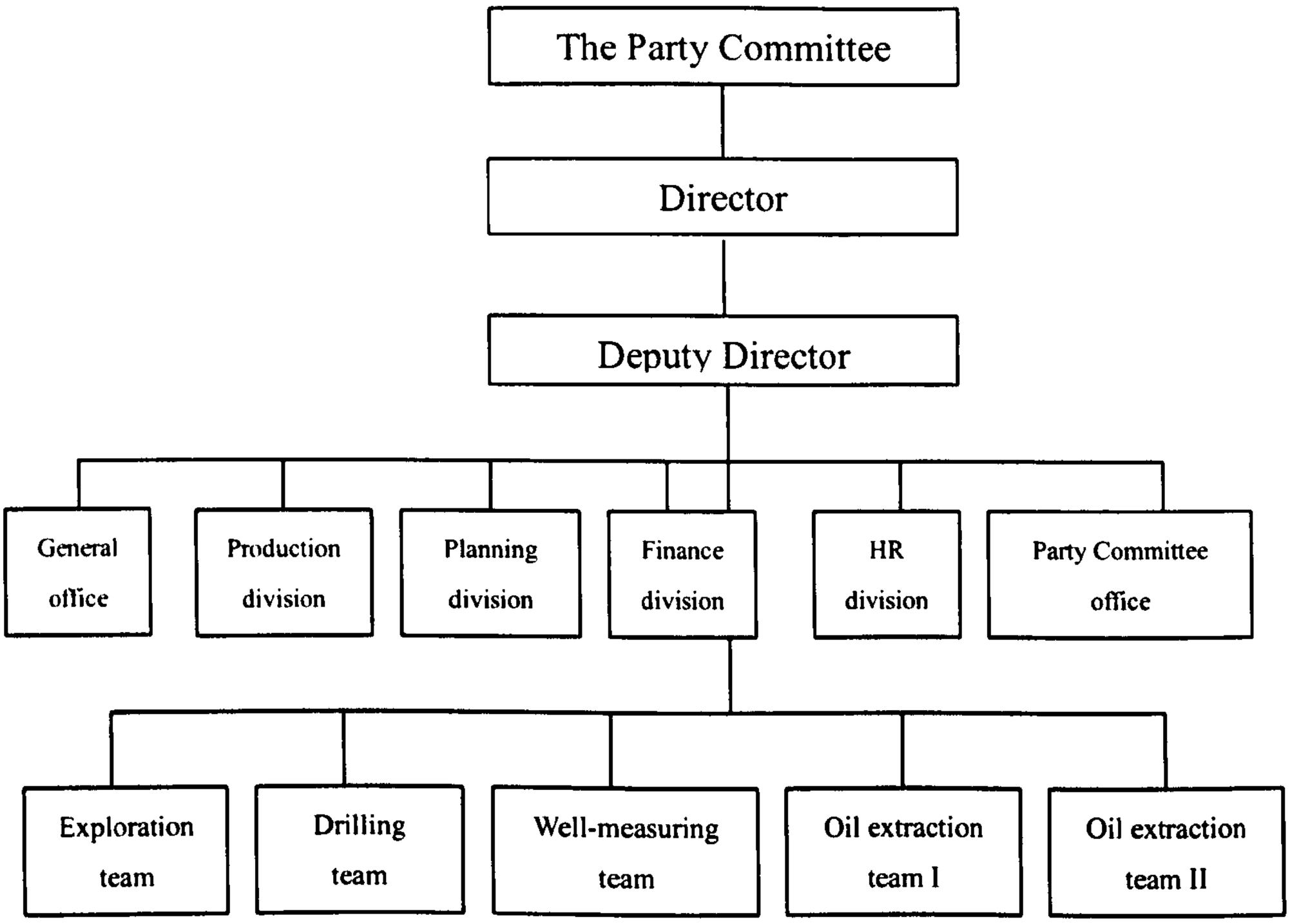
conduct development given the limited resources, personals and facilities available. Therefore the concept of massive campaign was come up with. Experienced technicians from several other fields were deployed to Daqing and 30,000 personnel form the People's Liberation Army was transferred to Daqing. The government also allocated very precious materials such as iron to the oil fields and organised the development in a way of organising a battle." According to Zhang, The army as "oil man" has a "strong sense of responsibility for the collective and the country. They were highly disciplined and very skilled in organization. They were able to mobilize fast to achieve their goals".

[235] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.75-77

[236] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.9-10

Figure 4-6 The organisational structure of a typical PAB



4.2.3 The pricing and distribution system

Under the strict centrally planned economic system during this stage, there was no effective market for almost all commodities, including petroleum. The government controlled the allocation and distribution of resources and commodities in the national economy and set prices for them. They served as central planner of the country and set the prices for oil and oil products,[237] and directly controlled the flow of them.[238]

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[237] Shi, D. (2006). *The Research Report of Marketisation Reform of the Energy Industry (In Chinese)*. Beijing: Economy and Management Publishing House. p.230. The government set not only factory gate prices, but also transfer, wholesale and retail.

[238] Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press. p.20

4.2.3.1 The pricing system

During this stage, the prices for petroleum and petroleum products were used by the government as a tool to support economic, fiscal and energy policies, and to control inflation or re-allocate income, rather than as a tool to reflect value of goods. The petroleum pricing system experienced three stages from 1949 to 1978, including the no price stage (1949-1955), the high price stage (1955-1971) and the low price stage (1972-1978).

There was no price for crude oil before 1955. Petroleum was produced in only one oilfield, Yumen oilfield. All production was allocated by the government to state owned refineries and no price was used for this purpose.

There was a high oil price stage from 1955 to 1971. The government began to establish an oil pricing system in 1955 following the development of more oilfields, including the massive Daqing oilfield. A high oil price policy (compared to international oil prices) was chosen by the Chinese government for the purpose of energy conservation and revenue collection.[239] In 1961, the international oil prices were less than $2/bbl whereas the Daqing oil price was RMB 130 yuan/ton,[240] which was equivalent to about $8/bbl,

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[239] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.10. One characteristic of the Chinese fiscal regime during this stage was that the government kept the prices for industrial products purposely high. This was not only for the purpose of supporting the development of industry sector, but also for the purpose of rent collection, as the government collect all profit of SOEs during this stage.

[240] Ren Min Bi (RMB) is the name of the Chinese currency, means People's Currency

four times of the international level.[241] This was sensible for a net importer.

The period from 1971 to 1978 witnessed a period of low oil price policy. It was mainly caused by a stabilisation policy that the government pursued so as to keep the domestic price of petroleum relatively stable. As a result of the policy and the surge of international price during the two oil shocks, the domestic price level was much lower than the international prices by the end of this stage. In 1979, the international oil prices were about $29/bbl, nearly four times that of domestic oil price. The ability of the country in maintaining its domestic price level stable was attributed to its transformation from a net importer into a net exporter during the 1970s.

The government maintained a similar policy for oil products. During this stage, the factory gate prices for oil products were set by the MPI based on the principle of cost plus profit margin. The wholesale and retail prices were set by the government. Similar to the price level of crude oil during this stage, the price level for oil products remained almost unchanged during this stage with the price of gasoline ranging from RMB 400 yuan/ton to RMB 700 yuan/ton, and diesel from RMB 240 yuan/ton to RMB 430 yuan/ton.[242]

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[241] Ibid. p.11

[242] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.23-26

4.2.3.2 The distribution system

During this stage, the allocation and distribution of commodities in the country were conducted by the government based on a rigid annual plan, which contained many interlocking balance tables for commodities.[243] SOEs had no right to sell their products and had to submit all their products to be allocated under the government allocation system, at prices set by the government. During this stage, a large share of petroleum was exported. The crude oil export increased from 0.3 mn tones to 12.8 mn tones from 1965 to 1978.[244] The import and export of petroleum was tightly controlled by the government through China Import Company, an SOE established in 1950s. The name of the company was changed into the China Chemical Import and Export Company ("Sinochem") in 1960s.[245]

To conclude, there was no market system existing during this stage and price setting and commodity flows were tightly controlled and were set by the government instead of the market. Although supply and demand played a role at the beginning of this stage in setting prices, control over inflation, affordability of oil, and the collection of rent, became more important rationales in pricing petroleum and petroleum products. As a result, price failed to function as an important economic signal to guide the allocation of

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[243] Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press. p.20

[244] Calculated based on data available from BP statistics review, BP. (2006). BP Statistical Review of World Energy 2006. Retrieved 21 Jan 2007, from http://www.bp.com/productlanding.do?categoryId=6842&contentId=7021390

[245] SinoChem. (2006). The History of Sinochem Corporation (In Chinese). Retrieved 10 Apr, 2007, from http://www.sinochem.com/tabid/138/Default.aspx

resources in an effective way. Furthermore, the petroleum sector lacked the autonomy to sell its own products and set their prices. It also lacked market signals to organise its production accordingly. These factors jointly restricted the sector from developing these capacities.

4.2.4 The fiscal and financial regime

The financial relationship between the government and the petroleum sector was also highly centralised with the government taking an active role and the petroleum sector taking a passive role. The government provided all capital and materials needed by the petroleum sector and collected rent from the petroleum sector in the form of profit, depreciation and taxation. The government also took a direct control of the process to ensure smooth and safe transfer of funds. The total financial transfers between the government and the petroleum sector during this stage are shown in Table 4.3.[246]

4.2.4.1 The fiscal regime

During this stage, the main measure that the government employed to extract rent from the petroleum sector was profit remittance, with taxation playing only a marginal role. All profit and depreciation, the net cash flow of the petroleum sector, were collected by the government. Many taxes were waived for the petroleum sector. For example, the Industrial and Commercial Taxation, one of the most important taxes in the country was

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[246] PetroChina internal report received from the Finance department during interview in Beijing in 2006

waived from the petroleum sector from 1949 to 1970.[247] This was not only because of the government's intention to foster the petroleum industry, but also because of the general practice of government in collecting most revenue by profit remittance during that time.

To ensure effective collection of rent from the petroleum sector, a direct controlling mechanism was employed by the central government. The most notable system was called "pocket account". Under the system, all income of PAB was sent directly to a special account with access restricted to the government.[248]

4.2.4.2 The financial regime

All capital needs of the petroleum sector were provided through allocations in the government's budget. Government either provided capital by direct injection of core commodities such as iron and steel, or by providing interest free capital. During this stage, the government capital input in the sector was generous even during the period with tight fiscal situation. For example, in the second Five-Year plan period (1958-1962), as a result of "Great Leap Forward" and three-year famine, the government's available budget was reduced significantly from the previous Five Year plan. However, the investment in the petroleum sector from the government still doubled the level of the first Five Year plan (1953-1957). From 1949 to 1978, RMB

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[247] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.162-164

[248] Interview of a former finance officer of the Ministry of Petroleum Industry in Beijing in 2006

28.57 bn was injected from the central government to the petroleum sector. During the same period, RMB105.73 bn was submitted by the petroleum sector (see table 4.3).[249]

Table 4-3 The Financial Transfer between the government and the petroleum sector (1949-1978)[250]

Unit: RMB bn

Year		Total government investment	Total oil sector submission	Profit	Taxation	Depreciation
	1949-1952	0.17	0.12	0.1	0.01	0.01
First five year	1953-1957	2.17	1.05	0.67	0.23	0.15
Second five year	1958-1962	4.18	4.12	2.65	0.96	0.51
	1963-1965	2.23	4.89	3.12	1.21	0.56
Third five year	1966-1970	5.41	18.12	12.84	3.82	1.46
Fourth five year	1971-1975	14.2	40.27	30.66	8.73	8.8
	1976-1978	18.11	37.15	28.56	7.29	1.3
Total		46.47	105.72	78.6	22.25	48.7

4.2.5 The P-A relationship between the government and the petroleum sector

During this stage, NOCs were not yet established, and the MPI was the *de facto* NOC taking productive, regulatory and social responsibilities. Largely influenced by the socialist nature of the country's economic system, the government remained an active player during this stage, and controlled the investment, marketing, and financing aspects of the petroleum activity. The boundary between the government and the petroleum sector was vague and they were often viewed as one entity. The P-A relationship between the government and the petroleum sector established during this stage was mainly established from the perspective of the government to address the wider economic, political and social challenges facing the government.

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[249] PetroChina internal report received from the Finance department during interview conducted in Beijing in 2006

[250] The major reason for the surge in investment during 1971 to 1978 was the increase in petroleum sector's scale of production.

4.2.5.1 The tasks of the petroleum sector

The major responsibilities of the petroleum sector included not only productive tasks measured by production and reserves, which was clearly assigned by the government to the sector, but also regulatory, administrative, and social responsibilities. The government assigned these tasks mainly through administrative orders. The government retained the right to make decisions over other important aspects of petroleum activities. It became deeply involved in all aspects of the sector, such as investment and production planning, marketing and pricing, expenditure management, cost control, and financing. The government made decisions directly, either at the SPC level, or at the State Council level. Some very large projects were even directly monitored by top leaders such as Chairman Mao. This left a very little space for the sector to pursue its own interests at the cost of the state and the government.

4.2.5.2 The supporting system

The government also established a supporting system characterised by direct control, moral incentive system and harsh sanctions system.

Through a hands-on direct control mechanism, the government attempted to ensure the fulfilment of tasks assigned and the orders given to the petroleum sector. On the one hand, a strict controlling mechanism was developed to exert a daily monitoring and control over petroleum activities. For example, a special "pocket account" which

collected capital from the petroleum sector and accessed only by the government, could prevent the petroleum sector from imprudent use of capital (see section 4.2.4.1).The government also employed the parallel party system at all levels of the petroleum sector's organisation to exert an extra level of control and monitoring over the daily operations of the petroleum sector (see section 4.2.2). The party and the central government also retained the power to appoint senior officers of the MPI. The Ministers of the MPI were assigned by the central government and were often personally loyal to the leaders.

On the other hand, acknowledging the weak regulatory capacity, the government purposely employed a simple monitoring and control system. For example, the revenue collection from the petroleum sector by a lump-sum amount of profitability and depreciation, instead of using more economically meaningful taxation tools, accommodated the weak fiscal regime of the country.

From the perspective of the incentive system, financial and material incentives did not play a major role during this stage. They were negligible in supporting the tasks of the petroleum sector. Instead, the government established a moral incentive system to enhance the performance of the petroleum sector. For example, during the development of the Daqing oilfield, top leaders including Premier Zhou Enlai, Vice Chairman Liu, and General Secretary of the Communist Party Deng Xiaoping visited the site and

showed great support from the central government.[251] The government also used the media such as newspapers and propaganda songs to create a strong patriot and heroic sentiment closely related to the petroleum sector. For example, a song about Karamay oilfield became extremely popular around the country after the commencement of production at the Karamay oilfield in 1955. Role models were also established to mobilise and invigorate individuals. For example, during the Daqing massive campaign, an "Iron man" model was promoted around the petroleum sector to invigorate ordinary workers, managers and technicians with a high spirit and a sense of pride.[252] The role model of the "iron man" proved to be so successful that it was even promoted at a national level and became a household name.

Although not well documented, there was an extremely strict sanctions system prevailing during this stage. The petroleum activities were pictured by the leaders as being vital for China as an independent socialist country being able to confront imperialist forces. Meanwhile, the political atmosphere was still intense under Chairman Mao's constant arguments that there were still plenty of enemies disguised as ordinary citizens within the country. As a result, failure to meet production levels or production accidents could easily be blamed on the intentional activities of such enemies seeking to undermine socialist construction. If the performance of the MPI was

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[251] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.176

[252] The man's name was Wang Jinxi, he was one of the biggest role model established by the Party during the Daqing "massive campaign. He was famous in the whole nation for being tireless and hard working under extremely harsh conditions.

poor, then the head of the ministry could be removed from the position or attacked by the opposite political power. Thus the Ministers were under huge pressure to run the sector well.[253]

4.3 The evaluation of the effectiveness of the petroleum institutional arrangement

The petroleum institutional arrangement established during this period had many positive aspects. However, in a long term perspective it had negative impact on the commercial performance of the petroleum sector.

4.3.1 The positive aspects of the petroleum institutional arrangement

The petroleum institutional arrangement established during this period was effective in achieving the main objectives of the government at the time, in its compatibility with the national capacity of the country and between the tasks and supporting system.

The productivity task which emphasised the availability of physical petroleum production was critical in addressing the challenges facing the government during this stage, in terms of national security, promoting economic growth, and in acquiring foreign currency. The petroleum industry performed well in achieving the tasks during

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[253] Wang, S.-S. (1982). Hu Yaobang: New Chairman of the Chinese Communist Party. *Asian Survey, 22*(9), 801-822.

this stage, which could be reflected by the reserve and production figures.[254] The petroleum reserves increased significantly during this stage with the successful exploration of more than ten medium to large sized oilfields, although detailed data was not available. Annual production increased from less then 0.12 million tons to more than 100 million tons.[255]

As analysed in section 4.2, in addition to the production tasks, the petroleum sector also took on regulatory and social responsibilities. This structure was cost-effective for a country with poor national capacity and lacking qualified staff and resources. This practice also helped the government in developing its regulatory capacity through "learning by doing".

The production tasks as well as the regulatory and social tasks assigned to the petroleum sector were also compatible with the national capacity of the country. The indicator of production was simple and easy to measure, which was a positive factor in a country lacking regulatory capacity. It was also suitable as the country had no market capacity for prices to be formed and for enterprises to compete with each other and conduct investment in an autonomous way.

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[254] For the international involvement in Chinese petroleum industry from 1949-1978, see Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press.

[255] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.5

The petroleum institutional arrangement established during this period was also effective in terms of the compatibility between the tasks and supporting system. As has been analysed in chapter 3, in theory this co-existence of commercial and non-commercial tasks could result in "conflict of identity effect" and "multi-task effect". However, the negative effect was not significant in China because of an effective supporting system established by the government, which will be analysed below.

The direct control and monitoring system that the government employed during this period was not only suitable for the tasks assigned by the government, but also appropriate to the situation of the country. An extremely tight and hands-on control and effective incentive and sanction system helped to avoid rent-seeking problem, therefore avoiding the negative "conflict of identity effect" and "multi-tasks effect", which was common for petroleum sector performing regulatory and social functions. Additionally, for a new government with weak institutional capacity, and lack of market capacity, direct control could help the government train its staff and build up regulatory capacity. The government's direct control was also a positive mechanism during an unstable period with higher probability of crisis, as it enabled the government to respond promptly. For example, when the party system was paralysed during the Cultural Revolution, military force was deployed to control and stabilise the production.

From the incentive system perspective, the use of moral incentives as well as harsh sanctions functioned well under these circumstances and was compatible with the tasks

assigned to the petroleum sector. First of all, the country in general was extremely poor with very limited resources available to support an effective material incentive system. Moral incentive could also function well in view of the passion of the people for their newly established country. Patriotic, socialist, and communist ideologies prevailed across the country, particularly when the people were simple and less materially driven. As a result, national pride, patriotism, and loyalty to the Chairman Mao, to the party, and the People's Liberation Army were important factors for people working in the petroleum industry.

Meanwhile, the head of MPI had the incentive to perform well for the benefit of the country given that her/his next position could be somewhere in the central government. Promotion or demotion was thus an effective incentive for the head of the sector. In fact, Yu Qiuli was promoted as the head of the SPC after his tenure in the petroleum sector. Similarly, senior managers in the sector were rewarded by the government with foreign visits if they deliver positive results.

4.3.2 The negative aspects of the petroleum institutional arrangement

Despite the short term positive aspects analysed in the previous section, the petroleum institutional arrangement had long term negative implications.

From the perspective of the said framework, the vague line between the government and the petroleum sector potentially confused the identity of the petroleum sector with that

of the government. This would take years to rectify. As mainstream literature has pointed out, the dual role of the petroleum sector as regulator and operator may have nurtured rent-seeking in the long run and caused confusion of identity. Additionally, the enterprise operating society model might be efficient in the short-term, but may have caused inefficiency in the long run, due to the multi-task effect which squandered resources and distracted managers. Although the Chinese government managed to control these negative effects through a well designed supporting system, as analysed in 4.3.1 the arrangement and the ideology related with it was institutionalised and could have a negative impact in the longer term.

From the task perspective, the focus on production and highly politicised decision making process of setting production target were at the cost of commercial performance. Economically unviable petroleum could be produced. It was reported that in order to achieve the target required by the government, some oilfields operated at a rate or by a method that harmed the long-term interest of the country from the resource perspective.[256] It was said that during the several decades of operations, the approach of placing emphasis solely on production had resulted in a severe waste of reserves, and "as much as 90% of the oil was wasted, left un-recovered underground or spent in gushers that coloured the pastures around the wells black".[257] It also impeded the petroleum sector from building up investment, financing and marketing capacity, as it

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[256] Interview of a former finance officer of the Ministry of Petroleum Industry conducted in Beijing in 2006

[257] Kynge, J. (2007). *China Shakes the World : the Rise of a Hungry Nation*. London: Phoenix. p129

lacked autonomy in these areas, and prevented it from developing a commercial culture. This approach has therefore had a negative impact on the commercial performance of the sector, the effect of which might take years to overcome as will be illustrated by next three chapters.

5 NOC REFORMS IN CHINA- STAGE ONE (1978-1993)

The period from 1976 to 1993 witnessed the corporitisation of the petroleum sector characterised by the creation of three NOCs, and the transition of the petroleum sector from the central planning system to a market system, comprising of the reforms of the pricing and distributing systems as well as the fiscal and financial regimes. These reforms were part of a wider transition of the country's general economy, under a new leadership and in a relatively peaceful internal and external environment. It also reflected the enhancement of national capacity, the changing nature of the government agenda, and changes in the productivity and other aspects of the petroleum sector.

This chapter first analyses the objectives of reforms in the petroleum sector by looking at the wider political, and economic context of the country and the nature of the petroleum sector. This is followed by an analysis of the new P-A relationship established between the government and the petroleum sector by reforming the regulatory framework, the industrial structure, the price and distribution systems, and the fiscal and financial systems. The chapter concludes with an evaluation of the reforms conducted during this stage.

5.1 The general background

5.1.1 The political background

The political context of the country went through many changes during this stage. As a result, economic development gained firm foothold as the top priority of the

government and the party, as will be analysed in section 5.1.2.[258]

Externally, the foreign relations of the country were significantly enhanced. The relationship with major developed countries such as the US was gradually improved. The government resumed its membership of the United Nations ("UN") and gained a permanent seat in the UN Security Council with the support of a large number of developing countries. A relatively peaceful external environment made it possible for the country to emphasise on economic development.

Internally, the death of Chairman Mao and the end of the Cultural Revolution brought Deng Xiaoping, an advocate of economic development, to power.[259] Furthermore, at the beginning of this stage, the political system faced severe challenges, with years of political conflicts having undermined both the capacity of the system for decision making and the people's trust in the party, which severely challenged its survival.[260] The challenges facing the party helped unify different opinions inside the party, and left the reformers with less resistance from the leftist faction.[261]

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[258] Lieberthal, K. (1995). *Governing China, from Revolution through Reform.* New York, London: W.W.Norton and Company, Inc. p.122-124. "For much of the Cultural Revolution, the party was an empty shell. One of the important effects of the Cultural Revolution was that job security for cadres in China was very low". Therefore, it was believed that market reform "would in effect strengthen the influence and authority of the party and provide new career opportunities for its representatives". Larsson, T. (2006). Reform, Corruption, and Growth: Why Corruption is more Devastating in Russia than in China. *Communist and Post-Communist Studies 39*, 265-281. p.273.

[259] Deng formally resumed power in 1977

[260] Lieberthal, K. (1995). *Governing China, from Revolution through Reform.* New York, London: W.W.Norton and Company, Inc. p.122-123. "'Mao's death left a power vacuum and a degraded state system in which those who were politically sainted one day could, the next, be overthrown and dragged through the mud, with often horrendous consequences for their families and major supporters".

[261] Larsson, T. (2006). Reform, Corruption, and Growth: Why Corruption is more Devastating in Russia than in China. *Communist and Post-Communist Studies 39*, 265-281.

5.1.2 The economic background

Economically, there was an ideological change in the country when the party and the government adopted a pragmatic ideology, emphasising economic development and supporting the "growth at all cost" strategy, and abandoning the "utopian, communist, and dogmatist" ideologies prevailing during the Chairman Mao's era.

Following the ideological change, a market driven economic reform was launched in 1978 during the milestone third Plenum of the National Party Congress's Eleventh Central Committee, which started to build the regulatory capacity of the government, the market capacity of the country, and the commercial capacity of enterprises.[262] Non-public enterprises were encouraged to be developed and positive measures were introduced to foster the market and to liberalise prices. Several aspects of the reform process, including the fiscal regime, investment policy, market and enterprises reforms, and the open-door policy of the government played a major role in influencing the reforms of the petroleum sector and shall be discussed in further detail and analysed in this section.[263]

5.1.2.1 The reform of the fiscal regime

The reform of the fiscal regime during this stage comprised of two main elements in an

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[262] Lieberthal, K. (1995). *Governing China, from Revolution through Reform*. New York, London: W.W.Norton and Company, Inc. p.124. Christiansen, F. (1996). *Chinese Politics and Society: an Introduction* London: Prentice Hall/Harvester Wheatsheaf. Wang, H. H. (1999). *China's Oil Industry and Market*: Elsevier. p.2. Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.16

[263] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.15

effort to enhance the role of taxation in the national economy.[264]

The first one was to enhance the role of taxation in revenue collection and to reduce the role of remittances from SOEs by establishing a more transparent and formal taxation system. It was argued that collecting revenue through a "large mess of undifferentiated" profit from enterprises was much less efficient than collecting revenue through "several economically more meaningful categories" of taxes.[265] A more transparent and formal taxation system was able to help formalise the financial obligations of enterprise to the state, to provide enterprises with more autonomy to retain their after tax profit, and to reduce the traditional bargaining process between the government and enterprises.[266] The government carried out two rounds of "tax for profit" reform in 1982 and 1983 in an effort to build a more transparent and formal taxation system. Following these reforms, the share of tax revenue in the total government revenue was correspondingly increased over the years as shown in table 5.1.[267]

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[264] Ibid. "The country had actually already carried out several rounds of economic reforms during the previous stage. However, the emphasis was placed on the adjustment of responsibilities between different levels of governments. Neither a market was built to provide signals in resources allocation, nor was enterprises assigned with autonomy for their own operations. As a result, the previous reforms proved to be ineffective in a large country like China"

[265] Naughton, B. (1996). *Growing out of the Plan: Chinese Economic Reform, 1976-1993*. Cambridge: Cambridge University Press. p.109

[266] Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press.p.120. Naughton, B. (1996). *Growing out of the Plan: Chinese Economic Reform, 1976-1993*. Cambridge: Cambridge University Press. p.109. Christiansen, F. (1996). *Chinese Politics and Society: an Introduction* London: Prentice Hall/Harvester Wheatsheaf. p.234,228

[267] Christiansen, F. (1996). *Chinese Politics and Society: an Introduction* London: Prentice Hall/Harvester Wheatsheaf. p.242

Table 5-1 Sources of Government Revenue by Type (1978-1991)

	Tax revenue (%)	Remittances from enterprises *(%)
1979	42.55	39.00
1980	43.95	33.46
1981	48.37	27.16
1982	49.67	21.04
1983	48.27	14.97
1984	51.41	15.02
1985	88.84	1.90
1986	85.45	1.72
1987	83.09	1.66
1988	85.26	1.82
1989	83.57	1.95
1990	80.26	2.23
1991	81.71	2.04

* Including extra budgetary taxes after 1983

Source: Ministry of Finance (1992)

The second element of reform involved the increased autonomy of enterprises, allowing them to retain a higher share of the profit. This element will be discussed in more detail in section 5.1.2.4 on reform of SOEs.

Despite the well-intended efforts of the government, the taxation reform remained incomplete due to the limitations imposed by the regulatory capacity of the government. Firstly, different tax rates and terms were applied to different regions, sectors, and enterprises, having different scales and ownership structures.[268] For example, the Corporate Income Tax for SOEs included three categories, corresponding to differences in scale and ownership of SOEs. Even within each category, different tax rates applied,

[268] Naughton, B. (1996). *Growing out of the Plan: Chinese Economic Reform, 1976-1993*. Cambridge: Cambridge University Press. p.229, 108

ranging from 7% to 55%.[269] As a result, the taxation system was uneven, complex and hard to enforce. Secondly, the profit remittance system continued to co-exist with tax system during this stage. The enterprise remittance was still used in collecting revenue through a newly established Contract Management Responsibility System ("CMRS"). According to the system, the government and enterprises signed contracts, designating key performance indicators of enterprises and the profit-split between the government and enterprises.[270] The contents of the CMRS were arrived at through negotiation and bargaining between the government and enterprises. The process was arbitrary and subjective, and the process of negotiation could be strenuous.

The increased autonomy of enterprises, the transitional and complicated taxation system, together with the fact that the government lacked the institutional capacity to control and monitor its enterprises and local governments, undermined the revenue income of the central government and its ability to control the economy.[271] By 1993, the share of central government revenue in the total government revenue was reduced to only 22%, and the central government was at risk of losing control of the macro economy, with severe surplus investment made at local and enterprise level, while local protectionism

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[269] Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press. p.120. "large and medium-sized enterprises pay a flat 55% rate on profits, small enterprises are taxed on an eight grade progressive schedule, which rises from 7% to 55%. Enterprises in the catering and service trades pay a flat rate of 55%."

[270] Naughton, B. (1996). Naughton, B. (1996). *Growing out of the Plan: Chinese Economic Reform, 1976-1993*. Cambridge: Cambridge University Press. p.204-209. The responsibility contract was first introduced in the agriculture sector and was expanded to the urban enterprises sector.

[271] Christiansen, F. (1996). *Chinese Politics and Society: an Introduction* London: Prentice Hall/Harvester Wheatsheaf. p.235, 243.

policies became rampant.[272]

5.1.2.2 The reform of the investment system

The central government also reformed the investment system to enhance the role of SOEs in making investment decisions and in raising capital, while to reduce the role of the government in such activities. From 1979 to 1991, capital expenditure as a percentage of the overall government expenditure declined from 35% in 1979 to 17% in 1991, nearly shrinking to half (see table 5.2).[273] The retained funds and commercial bank loans (domestic and international) became the primary means of fund-raising by SOEs by the end of 1992.[274] Additionally, even where the government continued financial assistance in some measure, the same was provided way of a loan under a "loan for grant" initiative, requiring enterprises to pay interest to the government.[275]

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[272] Bahl, R. (1998). Central-Provincial-local Fiscal Relationships' In D. J. S. Brean (Ed.), *Taxation in Modern China* (pp. 125-150). New York: Routledge. p.130

[273] Naughton, B. (1996). *Growing out of the Plan: Chinese Economic Reform, 1976-1993*. Cambridge: Cambridge University Press.p.106. In the previous stage, more than 60% of the capital needs of enterprises were provided by the government and were interest-free.

[274] This is also because of the increase of the enterprise autonomy, and the increasing profit retained by these enterprises, government has a strict regulation for the usage of the retained profit, with bones, welfare and retained funds rate fixed and accounts separated.

[275] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.166

Table 5-2 Government Budgetary Expenditure (1979-1991)

Unit: % of total

	Capital Construction	CESH*
1979	35.02	8.99
1980	28.51	9.94
1981	23.60	12.23
1982	20.31	12.94
1983	22.13	12.92
1984	24.89	13.40
1985	24.68	13.39
1986	25.30	14.31
1987	22.24	14.26
1988	20.09	15.42
1989	17.19	15.20
1990	17.66	15.02
1991	17.20	16.40

* Culture, Education, Science, and Health

Source: Statistical Yearbook of China (1991,1992)

Despite the above reform measures, the nature of the investment system did not change significantly. In theory, enterprises would be more concerned about investment efficiency if their capital was borrowed from commercial banks, or from government bearing interests. However, the banking system was still passive, owned and controlled by the government. Hence, SOEs still had easier access to bank loans with few checks and balances from the latter.[276] This together with increased autonomy and financial incentive to SOEs and poor regulatory capacity of the government to monitor their performance gave rise to serious bad debts in the mid 1980s, resulting in severe

[276] Garnaut, R., Song, L., & Tao, Y. (2006). Impact and Significance of State-Owned Enterprise Restructuring in China *The China Journal 55*, 35-63. p.36. "Although reforms during this stage, hardened budget constraint with banks, but has not been effective in hardening firms' budget constraint with the government."

problems for the national economy.[277]

5.1.2.3 The liberalisation of the market

The government also started to build up market capacity of the country by liberalising commodity prices and distribution systems gradually.[278] Two main measures were taken by the government, firstly, to increase the share of non-public owned enterprises in the overall economy, and secondly, to reduce the number of centrally planned commodities. By doing so, the government tried to build the market capacity, while still maintaining control over the economy through its control over SOEs and major commodities.

Non-public owned enterprises, most of them township and village enterprises (in Chinese term 'individual economy' and 'collective economy'), were encouraged to develop alongside SOEs at a fast pace.[279] With support from local governments, they quickly occupied markets where SOEs failed to fill in.[280] These enterprises normally operated in less strategically important sectors and were permitted to sell their products in the market at relatively liberalised prices. In many sectors, non-public enterprises

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[277] Chiu, B., & Lewis, M. K. (2006). *Reforming China's State-Owned Enterprises and Banks*. Cheltenham, UK.Northampton, MA, US: Edward Elgar. p.37-39. Christiansen, F. (1996). *Chinese Politics and Society: an Introduction* London: Prentice Hall/Harvester Wheatsheaf. p.243

[278] Naughton, B. (1996). *Growing out of the Plan: Chinese Economic Reform, 1976-1993*. Cambridge: Cambridge University Press. p.109

[279] Christiansen, F. (1996). *Chinese Politics and Society: an Introduction* London: Prentice Hall/Harvester Wheatsheaf. p.225. Belden, J. (1950). Kynge, J. (2007). *China shakes the world: the rise of a hungry nation*. London: Phoenix.

[280] Christiansen, F. (1996). *Chinese Politics and Society: an Introduction* London: Prentice Hall/Harvester Wheatsheaf. p.225

even substituted SOEs and became the dominant players.

Due to the prosperity of non-SOE enterprises and increasing competition from them, the prices for inputs were increased and prices for final products reduced.[281] In the situation, the government started to liberalise prices for commodities formerly allocated by the central planner, and allowed the market to play a bigger role, particularly in less strategically important commodities.[282] A dual-price and multi-price system was adopted to minimise the negative social and economic impacts of liberalisation. Thus some goods were subject to two or more prices, including the government planned prices and market prices.[283] The pros and cons of this dual price system were obvious. These measures helped to establish a market system in a relatively stable and smooth manner in a large country with imbalances in socio-economic conditions. However, it gave rise to speculation and rent-seeking, and increased the cost of regulation, especially when the government still lacked the institutional capacity to regulate the economy.

5.1.2.4 The reform of SOEs

The government also started to reform SOEs in order to reduce its intervention and to

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[281] Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press. p.118

[282] Chiu, B., & Lewis, M. K. (2006). *Reforming China's State-Owned Enterprises and Banks*. Cheltenham, UK.Northampton, MA, US: Edward Elgar. p.39-41. Naughton, B. (1996). *Growing out of the Plan: Chinese Economic Reform, 1976-1993*. Cambridge: Cambridge University Press. p.112

[283] Naughton, B. (1996). *Growing out of the Plan: Chinese Economic Reform, 1976-1993*. Cambridge: Cambridge University Press. p.220

provide them with more autonomy in a wider range of activities. The major measures of SOE reforms during this stage were the adoption of "Contract Management Responsibility System" ("CMRS"), "Factory Manager Responsibility System" ("FMRS"), and human resource reform, in order to increase the autonomy of SOEs.[284]

Through the CMRS, the government formalised tasks of the SOEs and assigned them with more autonomy on investment, human resource management, financial management, procurements management, and marketing. Another significant element of the contracts system was the selection of performance indicators. According to a survey, the number of enterprises able to control their own production plan increased from 25% in 1984 to 90% in 1988.[285] Different from the previous stage, when production was the main performance indicator, profitability gradually replaced the former, though the effectiveness of profitability as an indicator in measuring performance of SOEs is highly depended on how well the market of certain sector had been developed.

Through the FMRS, the government ensured through law that managers of SOEs took greater responsibility for the performance of their enterprises and were provided with performance-linked incentives.[286] Another remarkable characteristic of the system was that the party committees which used to take a superior position to managers in enterprises were gradually removed.

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[284] Ibid p.207-209
[285] Ibid. p.205
[286] The system was put into force since 1984. By 1988, a basic law on industrial enterprises SOEs put the system as one of its "fundamental tenets".

The human resource systems of SOEs were also reformed during this stage.[287] Permanent employment was abandoned gradually and employees were required to sign term contracts with employers, the so called "smash iron rice bowl".[288] Although, in practice, few people were fired for poor performance, a mechanism of "unemployment within factories" was widely applied in SOEs in early 1980s. Through the system, enterprises were allowed to remove workers with poor productivity from their work units without firing them.[289] The national unified salary system was also abolished gradually. Total wages paid by enterprises was allowed to be linked with profit or general performance. By 1988, the system was applied in about 60% of the enterprises.[290]

Through enforcement of the CMRS, the FMRS and human resource reform, the relationship between the government and SOEs was different from the previous stage. Increased autonomy, better sanction and incentive mechanisms were formalised by law and contracts.[291] SOEs and their managers were allowed a higher level of autonomy, including the possibility to retain more profit for their own use, to enjoy an accelerated

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[287] Kynge, J. (2007). *China Shakes the World: the Rise of a Hungry Nation*. London: Phoenix. This was partially selected by the government as one of the measures to improve individual productivity, and partially because the old system that the government provide employment and certain level of payment was under huge challenges along with the industrial structure adjustment and employment pressure caused by large number of people sent to countryside rushing back to cities.

[288] Christiansen, F. (1996). *Chinese Politics and Society: an Introduction* London: Prentice Hall/Harvester Wheatsheaf. p.234

[289] Ibid.

[290] Naughton, B. (1996). *Growing out of the Plan: Chinese Economic Reform, 1976-1993*. Cambridge: Cambridge University Press. p.205

[291] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.15

depreciation policy, to sell an increasing part of their products out of central-planned system at market prices, and were also granted more autonomy in managing their human resources. Further, performance-linked material incentives were allowed to be provided to workers, and theoretically, poorly performing workers could be subject to sanction or even redundancy.[292] Despite the positive aspects of these reforms, the effectiveness of the SOE reform was largely restricted by the poor national capacity, especially the poor regulatory and market capacity of the country. Due to these deficiencies, the government still assigned to the SOEs a wide range of social responsibilities. This together with the lack of market signals made it difficult for SOEs increase their profitability.

5.1.2.5 The open-door policy

This stage also witnessed the beginning of the open-door policy of the country, after it had been closed to the rest of the world for hundreds of years. Deng Xiaoping, who was educated in France, realised that successful economic reforms required an open door policy with full engagement with the rest of the world, and not a closed door policy, as pursued by Mao.[293] The main driver of the policy was the need to attract foreign capital and technological investments. "The Sino-Foreign Joint Venture Law of the People's Republic of China" was enacted in 1979 and two special economic zones were

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[292] Naughton, B. (1996). *Growing out of the Plan: Chinese Economic Reform, 1976-1993*. Cambridge: Cambridge University Press. p.99

[293] Lieberthal, K. (1995). *Governing China, from Revolution through Reform*. New York, London: W.W.Norton and Company, Inc. p.124

established in Guangdong and Fujian, [294] marking resumption in the inflow of foreign investments as well as exports on a larger scale. The relevance of the policy to the petroleum sector was that the import of petroleum became possible therefore reduced the need to promoting domestic production when it was not economically viable.

5.1.3 The petroleum background

The nature of the petroleum sector also changed considerably in terms of reserves, productivity, the level of consumption and the role of the petroleum sector in the national economy. The dominant themes in the petroleum sector during this stage were the rising domestic demand, decreasing supply, and severe financial crisis facing the sector. These factors undermined the ability of the sector to provide production, profit, government revenue and foreign currency and therefore reduced the attractiveness of the sector to be controlled by the government, and increased the urgency of the government to enhance the commercial performance of the NOCs. .

Economic growth (real annual growth rate averaging 9.7% between 1977 and 1993), industrialisation, and urbanisation processes increased the domestic consumption of oil (see Figure 5.1).[295] This fast growth of domestic demand for oil was coupled with a slow growth of production, as most of the major oilfields in the country had matured

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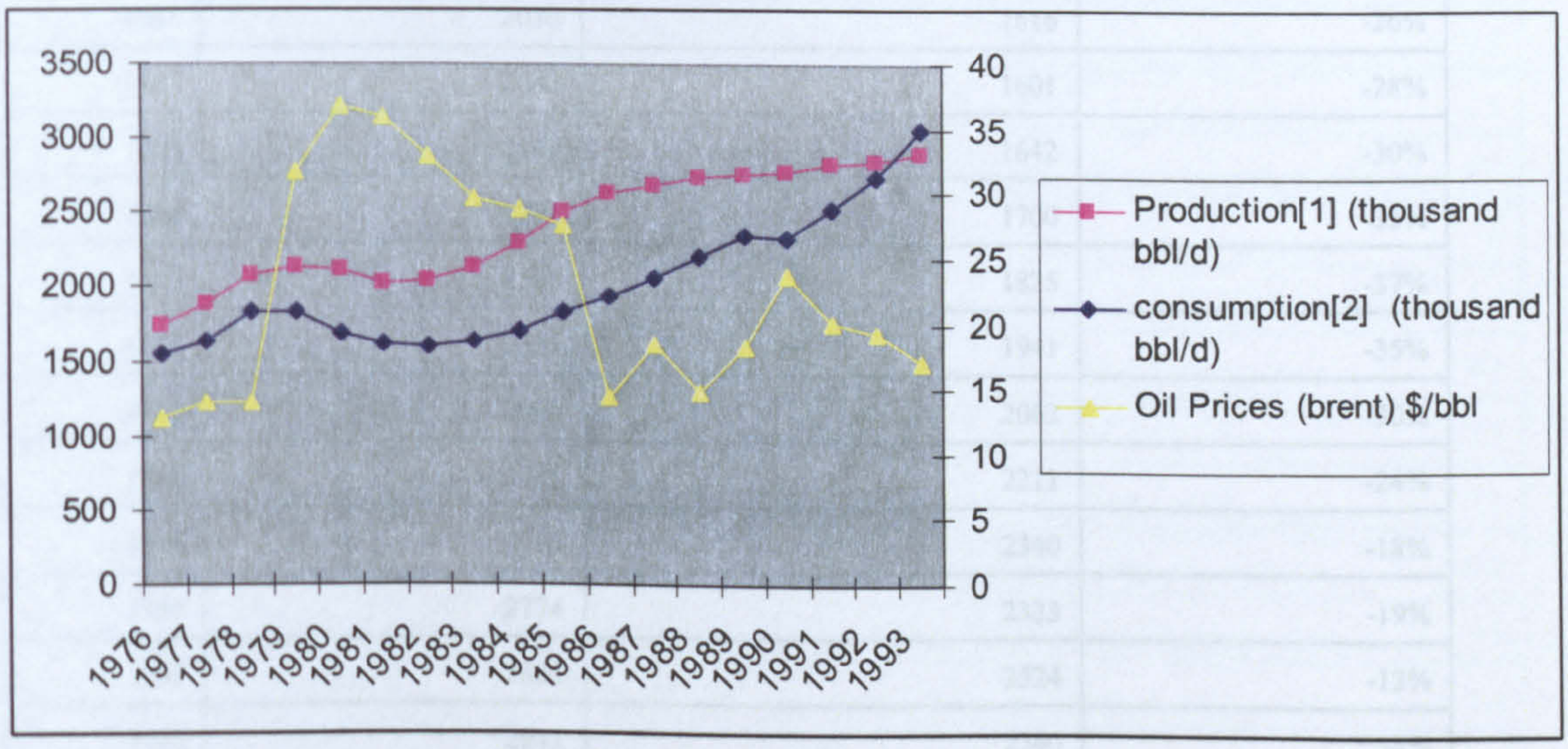
[294] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.16

[295] Wang, H. H. (1999). *China's Oil Industry and Market*: Elsevier. p.3. The average growth rate for the industry sector from mid 1980s to 1990s was 12%, The industrialisation process needs petroleum, both as fuel and as input materials

(see figure 5.1 and table 5.3, 5.4).[296] Strong domestic consumption and slow production growth retransformed the country from a major producer into a net importer of oil in 1993.

Figure 5-1 The production, Consumption and International Price of crude oil (1976-1993)



[296] BP. (2006). "BP Statistical Review of World Energy 2006." Retrieved 21 Jan 2007, from http://www.bp.com/productlanding.do?categoryId=6842&contentId=7021390.

Table 5-3 The Crude oil production and consumption (1976-1993)

	Production[297] (thousand bbl/d)	Consumption[298] (thousand bbl/d)	Export/ import Dependency (%)
1976	1743	1546	-13%
1977	1878	1638	-15%
1978	2087	1825	-14%
1979	2129	1833	-16%
1980	2119	1694	-25%
1981	2030	1616	-26%
1982	2048	1601	-28%
1983	2127	1642	-30%
1984	2292	1700	-35%
1985	2505	1825	-37%
1986	2621	1941	-35%
1987	2690	2062	-30%
1988	2741	2211	-24%
1989	2760	2340	-18%
1990	2774	2323	-19%
1991	2828	2524	-12%
1992	2841	2740	-4%
1993	2888	3051	5%

[297] Includes crude oil, shale oil, oil sands and NGLs (natural gas liquids - the liquid content of natural gas where this is recovered separately).

[298] Inland demand plus international aviation and marine bunkers and refinery fuel and loss

Table 5-4 The growth of GDP, and the production and consumption of oil[299]

Year	GDP growth %	Oil production growth%	Oil consumption growth %
1976	-5.4	13.1	14.9
1977	7.9	7.4	7.6
1978	11.7	11.1	9.7
1979	7.6	2	-1.7
1980	7.8	-0.3	-2
1981	5.2	-4.5	-5.2
1982	9.1	0.9	-0.2
1983	10.9	3.7	1.1
1984	15.2	8.2	3.3
1985	13.5	9	6
1986	8.8	4.6	8.7
1987	11.6	2.6	4.4
1988	11.3	1.9	3.4
1989	4.1	0.8	5.1
1990	3.8	0.5	-0.2
1991	9.2	1.9	6.5
1992	14.2	0.3	5.5
1993	13.5	2.5	7.6

*Total oil consumption includes total petroleum product consumption and crude direct burn

Source: China Statistical Yearbook 1997

The slow growth in production soon revealed the serious commercial inefficiency, which had resulted from the emphasis of the previous stage on production rather than on profitability. The petroleum sector soon faced a severe financial crisis during this stage. Several additional factors were believed to have contributed to this. First of all, as a relatively mature industry, the capital need of the sector was naturally increasing fast. During the period from 1981-1985, the capital needs estimated by the MPI increased

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[299] Wang, H. H. (1999). *China's Oil Industry and Market*: Elsevier. p.5

significantly from RMB 2.75 bn in 1981 to RMB 9.71 bn in 1985.[300] Second, the oil price was kept low by the government during this stage in order to control inflation whilst the cost of extracting oil had increased as the oil fields matured.[301] Additionally, the price level for core inputs such as steel, power, and land had risen significantly.[302] Third, the government significantly reduced investment to the petroleum sector as the energy policy started to emphasise non-oil sectors such as coal and power.[303] In 1981, the government established the new policy of "Coal for Oil" to promote the use of coal in previous oil-fuelled power plants.[304] In 1981, the government's investment in the petroleum sector was drastically reduced to only half of the level in 1980.[305] From 1981 to 1985, the share of the government's budgetary grants towards the total capital needs of the petroleum industry was reduced from 57% in 1981, to 31% in 1984, and 25% in 1985.[306] Fourth, the existing Soviet style accounting, system which emphasised the productive activities and overlooked investment activities failed to allow the petroleum

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[300] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.168. The main reasons for the fast-growing capital needs were: (1) production depleting; (2) market reform increased the prices for input while oil prices was remained mostly unchanged.

[301] Ibid. p.6

[302] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.25

[303] Wang, H. H. (1999). *China's Oil Industry and Market*: Elsevier. p.3. In 1978, 20% of industrial capacity remained unused due to shortages of energy, especially electricity and coal

[304] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.8, 26. This released the pressure shortly on the demand of oil and resulted in a short period of drop of consumption during 1980-1985. Yan, C.-L. (1997). *China's Energy Development Report (In Chinese)*. Beijing China Economic and Management Publishing House. p.2-3. "By 1993, the share of the petroleum sector production in the overall energy sector had decreased from 23.75% in 1980 to 18.7% in 1993. The share of the petroleum consumption in the overall energy sector reduced from 20.7% to 18.2% in the same period". Wu, D. (1989). *Modern China's Coal Industry (In Chinese)*. Beijing: China Social Science Publishing House.p.88. The investment to coal industry had also increased. As a result, the coal production increased dramatically, from 350 million tons in 1975 to 550 million in 1977 and 827million ton in 1985.

[305] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.77

[306] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.168

sector to recover investment through cost accounting. This started to present severe problems for the petroleum sector when the government reduced its financial support to this sector.

5.1.4 Changes in national Capacity

The country's absolute regulatory capacity was enhanced during this stage due to younger and better educated individuals being inducted in the workforce, to the development of new laws and regulations, and to the experience that the government machinery had acquired.[307] However, the relative regulatory capacity of the central government remained weak and insufficient. This was mainly due to the increased size and complexity of the national economy, the reduction of the central government's controlling power due to the decentralised fiscal regime, and the removal of the dominant control of Party in the daily operations of SOEs.

The market capacity was also enhanced compared to the previous stage, with more commodities being allowed to be traded freely in the market at more flexible prices. But the market was still in a relatively primitive stage, with most core commodities and their prices under the control of the government and the prevalence of dual or multi price system. This increased the challenge for the government to regulate and confused the market players in their decision making.

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[307] Lieberthal, K. (1995). *Governing China, from Revolution through Reform*. New York, London: W.W.Norton and Company, Inc. p.178, 204. During the reforms the state planning officials are losing power, and the localities and ministries were accordingly empowered.

From the perspective of the petroleum sector, there was a significant increase in the productive capacity. However, the industrial capacity of the industry in terms of investment, marketing and financing was still weak due to the sector's lack of autonomy in these fields, as analysed in section 5.2.

5.1.5 The objectives of reforming the petroleum sector

Influenced by the above factors, the objectives of the government in terms of regulating the petroleum sector had changed significantly. The emphasis had been placed on profitability and commercial performance, instead of production. However, restricted by the weak national capacity, the government had to take a conservative approach in reforming the sector in order to maintain stability.

First of all, the availability of domestic oil production became less relevant due to more friendly international relations, a new open door policy and increased foreign reserves of the country, which together meant it was possible to import oil from other countries (See figure 5.2 for the foreign reserves of the country from 1976 to 1994).[308] As a result,

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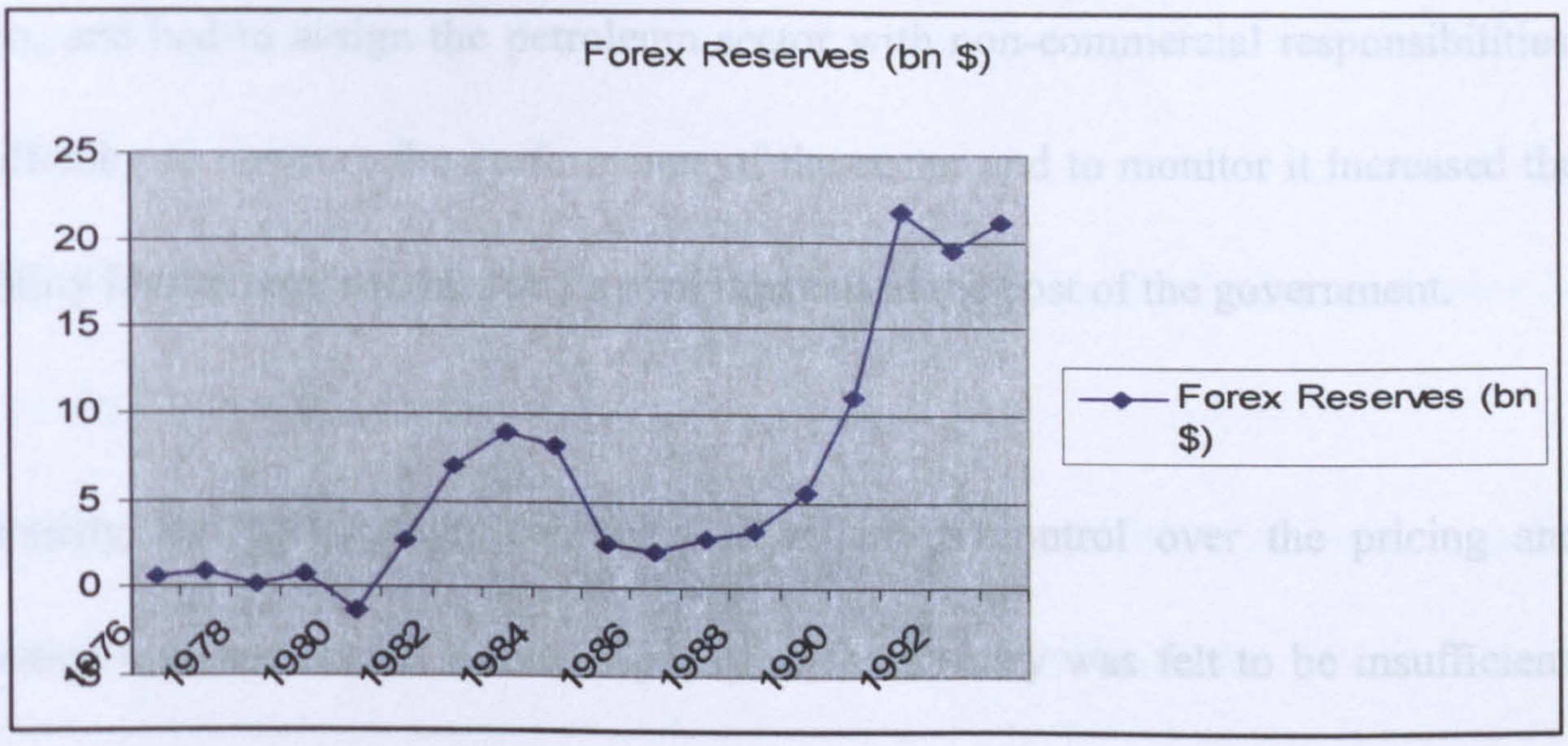
[308] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.208,216. Kynge, J. (2007). *China Shakes the World: the Rise of a Hungry Nation*. London: Phoenix. Nevertheless, this process did not come overnight. In the beginning of the stage during late 1970s and early 1980s, the country actually faced a critical balance of payment difficulties. The economy became more open to the outside world, government under the leadership of Deng needed more foreign currencies to buy large amount of producing facilities from overseas for a number of core industries. The government was gambling that they could have luck with oil which can generate foreign currency they needed to finish these purchase.
Shi, D. (2006). *The Research Report of Marketisation Reform of the Energy Industry (In Chinese)*. Beijing: Economy and Management Publishing House. p.219. The oil export peaked in 1985 when oil export valued of US$6.7bn, and accounted for 24.5% of the total export of the country

the production was not the top priority of the petroleum sector anymore.

Figure 5-2 The Foreign exchange reserves



Second, it was less attractive and necessary for the government to retain control and keep intervening in the sector. The reduction in production and financial crisis facing the sector turned it into a burden for the government rather than a "cash cow". Additionally, being a net exporter throughout the stage under a low international oil prices scenario, the country had less security of supply concern. Furthermore, the general economic reforms also encouraged market-driven economic reforms in the petroleum sector.

However, due to several concerns, the government needed to control the petroleum sector in order to prevent it from pursuing its own exclusive interest. This prevented it from reforming the sector in a more radical way. The petroleum sector had grown into a player with its own separate identity, due to its increasing autonomy. It also developed significant commercial and regulatory capacity, which equipped it with the ability to

influence the government for higher budgetary allocations and better terms from the government. The government, on the contrary, still had a relatively weak regulatory capacity, and had to assign the petroleum sector with non-commercial responsibilities. The difficulty to measure the performance of the sector and to monitor it increased the probability for the sector to pursue its own interests at the cost of the government.

Additionally, the government continued to retain its control over the pricing and distribution systems, as the market capacity of the country was felt to be insufficient, and also for social equity considerations. Controlling the NOCs was a critical measure to control the petroleum value chain, and therefore it was an effective measure to buttress the regulated pricing and distribution policies.

Furthermore, the segmented accounting standards prevailing during this stage prevented the government from collecting qualified information from the petroleum sector. Also, the administrative pricing and distribution system denied the availability of a fair market price, which was essential in calculating an economically meaningful profitability indicator. This also resulted in a situation where the petroleum sector had its real commercial performance obscured, thus presenting it neither an incentive nor responsibility to better its performance. Under this situation, production had to be used continuously as a major performance indicator of the petroleum sector.

As a result, the government's intention to commercialise the petroleum sector and to

liberalise the petroleum market was restricted by the relatively weak national capacity of the country. This determined the extremely cautious and transitional natural of the reforms of the petroleum sector during this stage as will be analysed in the next section.

5.2 The reforms of the institutional arrangement of the petroleum sector

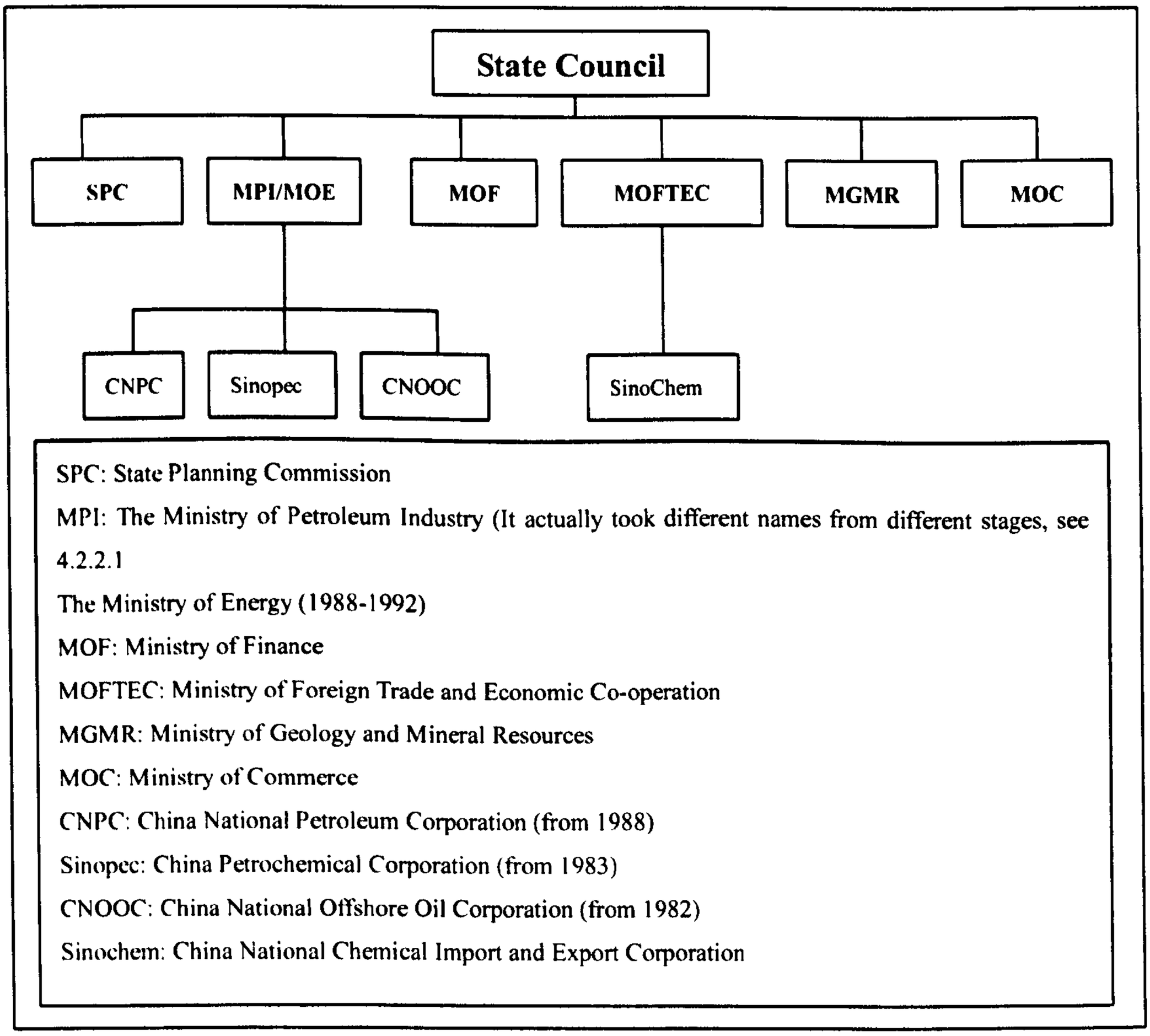
The institutional arrangement of the petroleum sector in China underwent major changes during this stage mainly driven by the objectives of the government as discussed in section 5.1. The major elements of the petroleum sector reforms since 1976 were, firstly, the corporatisation of the sector by transforming and restructuring the MPI into several NOCs and gradually increasing their autonomy, secondly, the partial liberalisation of oil price system by the introduction of dual and multi-price system, and thirdly, the formalisation of fiscal and financial systems.

5.2.1 The reform of the regulatory framework

Driven by its intention to commercialise the petroleum sector, the government corportised and restructured the MPI and established three NOCs, in the hope of further separating the role of the government and commercial identities, and increasing the autonomy of the petroleum sector. The details of the corportisation are analysed in the next section on industrial structure. An Energy Ministry was established in 1988 to regulate energy related issues (as shown in Figure 5.3). Despite the establishment of the ministry, a large amount of regulatory and administrative functions were left with the

newly established NOCs. Therefore, the regulatory framework remained similar to the previous one, with only a few minor changes such as the vesting regulatory powers in the Ministry of Geology and Mineral Resources ("MGMR") over natural resources. Also, several minor adjustments were introduced in the functioning of existing government agencies.

Figure 5-3 The regulatory and industrial framework (1978-1993)



5.2.1.1 The MGMR / MPI – the resource management

The Ministry of Geology and Mineral Resources ("MGMR") was the government agency in charge of resource management. Although it existed during the previous stage,

its role in resource management was limited to broad geological and geophysical survey, and major functions of resource management remained within the specific MPI and comprehensive regulatory bodies. The enactment of a new national resource law, the "Mining and Resources Law of PRC", in 1986, introduced the role of the MGMR as the primary body in charge of resource management, especially as a registry of exploration and development rights over natural resources. However, due to the lack of capacity in the ministry, the management of oil and gas resources, which were categorised under the Law as special resources, was still managed by the MPI from 1986 to 1988, and the Ministry of Energy from 1988 to 1993.[309]

5.2.1.2 The SPC - long term planning and projects approval/ production role

The functions of the SPC remained more or less the same in terms of regulating the production, investment and marketing aspects of the petroleum sector. The commission still played a key role in long term planning, investment management, setting production levels, approving large projects, setting prices and regulating the distribution of crude oil and oil products (The detailed distribution and price system will be analysed in section 5.2.3).[310] Although the power of the commission in the general economy started to reduce slowly during this stage, due to the reduced share of centrally controlled commodities and the decentralised investment system, its role in the

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[309] Chinamining. (2003). The Oil and Gas Mining Regulatory System in China (In Chinese). Retrieved 4 Apr, 2007, from http://www.chinamining.com.cn/report/default.asp?V_DOC_ID=1360

[310] Shi, D. (2006). *The Research Report of Marketisation Reform of the Energy Industry (In Chinese)*. Beijing: Economy and Management Publishing House. p.230. Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House.

petroleum sector was still relatively strong.[311] SPC also undertook other responsibilities for governing the petroleum sector, such as the import and export management, through a quota system, and input control, as it still retained the right to allocate key commodities such as steel and power, although the share of these key commodities in the economy was decreasing.[312]

5.2.1.3 The MOF - Financial and fiscal management

The role of the MOF as the main body of formulating finance and taxation policy of the petroleum sector remained unchanged to a large extent as analysed in section 5.1 despite reforms of the fiscal and financial regime of the petroleum sector. The major change in the financial policy during this stage was a reduction of direct funds that the Ministry provided to the petroleum sector. However, the government still played a major role in helping NOCs to raise capital, the details of which will be discussed in section 5.2.4 of this chapter. Reforms were also conducted in the taxation of NOCs to increase incentives and to formalise their relationship with the government, which shall be analysed in further detail in section 5.2.5.

Other changes of policy included the enhancement of the accounting standards by the Ministry during this stage in order to increase the quality of information on cost accounting. The Ministry improved the cost accounting standards of SOEs in 1984 to

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[311] Lieberthal, K. (1995). *Governing China, from Revolution through Reform*. New York, London: W.W.Norton and Company, Inc. p.204

[312] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press.

curb the rising cost of SOEs and the abuse of cost accounting. Despite this effort, the Soviet style accounting was not addressed effectively. This together with the segmented accounting practice, with different sectors employing different accounting methods, still prevented the government from acquiring high quality financial information from the petroleum sector.

5.2.1.4 The Ministry of Energy

In 1988, when the MPI was transformed into an NOC named CNPC, along with the Ministry of Coal and the Ministry of Nuclear Industry, a new Ministry of Energy was established to take some of their administrative functions. Its official responsibilities included "formulating foreign cooperation policy, energy policy, approving of bidding rounds, devising long-term planning, and approving of large projects".[313] But it never played a significant role, as compared to the powerful SOEs with regulatory functions, and was abolished a few years later in 1993.[314]

5.2.2 The reforms of the industrial structure

As been discussed in the previous section, a new industrial structure was established by the government with the MPI being abolished and three NOCs being established. This section will analyse the specific rationales behind the establishment of each NOC. The involvement of foreign investment, and the internal structure of NOCs, using the

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[313] Chinamining. (2003). The Oil and Gas Mining Regulatory System in China (In Chinese). Retrieved 4 Apr, 2007, from http://www.chinamining.com.cn/report/default.asp?V_DOC_ID=1360

[314] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.78

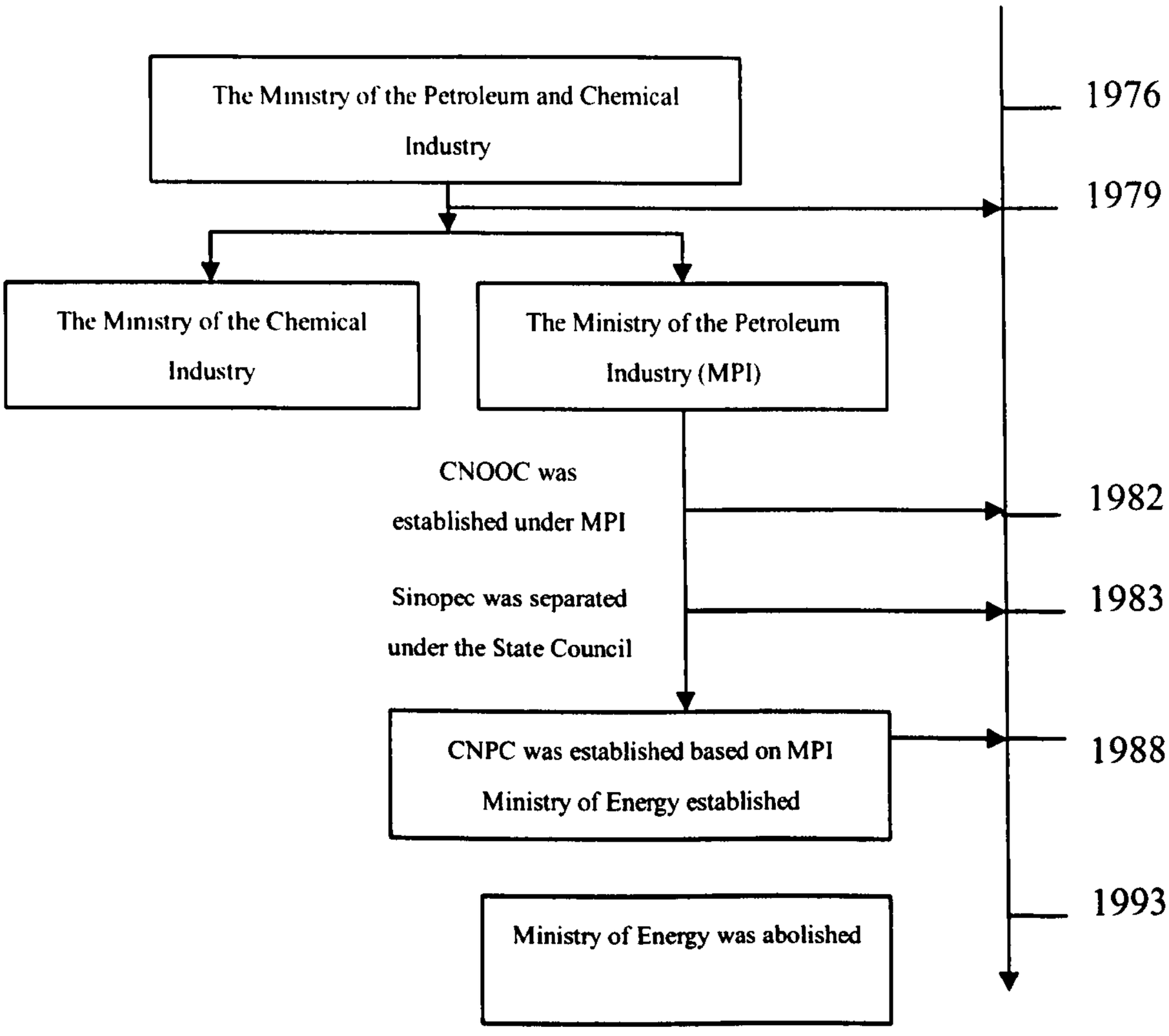
example of CNPC, will also be discussed.

5.2.2.1 The evolution of the petroleum sector

During the early years of this stage, from 1976 to 1988, the industrial structure of the petroleum sector remained more or less similar to the previous stage with a specific line ministry in charge of the petroleum sector. From 1976 to 1978, the Ministry of the Petroleum and Chemical industry was in charge of the petroleum sector, which was separated into the Ministry of Chemical Industry and the Ministry of Petroleum in 1978.

Three NOCs were established between 1978 and 1988. In 1982, the China National Offshore Oil Corporation ("CNOOC") was established to facilitate the offshore foreign cooperation under the MPI. In 1983, the downstream activities were separated from the MPI, and these together with other refinery and petrochemical activities of other industries and local governments were transferred to a new NOC named Sinopec Corporation ("Sinopec") under the direct supervision of the State Council. The most notable change occurred in 1988 when the government transformed the MPI into a new NOC named China National Petroleum Corporation ("CNPC"). Most of the regulatory and administrative functions of the previous ministry were retained in CNPC, although the Ministry of Energy coordinated the regulation of the energy sector as discussed above. The changes in the regulatory and industrial framework are shown in the figure 5.4.

Figure 5-4 The Evolution of the regulatory and industrial framework (1988-1993)



5.2.2.2 The establishment of CNOOC (1982)

CNOOC was established in 1982 as a general bureau under the MPI, serving as a government agent to regulate the new involvement of foreign companies in China's petroleum sector.[315] The establishment of it as a separate entity was called for by the foreign players, who were concerned about the complexity of the regulatory framework in China as well as possible barriers from different vested interest groups.[316] To ensure a less complicated regulatory environment and to free foreign investors from

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[315] The rank of general bureau is between deputy ministry and bureaus and was half a level lower then a deputy ministry and a half level higher than a bureau

[316] Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.123-124

interventions from different levels of government, the government established the NOC. The contracts signed between foreign companies and the NOC would be a "binding document".[317] The new NOC enjoyed a number of privileges, including the right to sell its production in the international market at international prices, retain the foreign currencies it earned, and keep the after-tax profit.[318]

In addition to its operational functions, the company was also assigned with the regulatory task as the representative of the government.[319] It acted as a government agent to ensure the sovereign power over foreign involvements, and exercised "exclusive control over the negotiations and licensing around, exploration, development and marketing of all oil resources within offshore areas designated by the Chinese government".[320] The company soon gained its legal entity and business license and separated itself from the MPI and operated relatively insulated from the regulatory framework of the petroleum sector.

5.2.2.3 The establishment of Sinopec (1983)

Sinopec was established in 1983 based on a small number of refineries belonging to the

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[317] Ibid. p.255
[318] Ibid. p.125
[319] Ibid. p.123-124
[320] Yan, X.-C. (1998). *The Grand Restructure of the Chinese Petroleum Industry (In Chinese)*. Beijing The Petroleum Industrial Publishing House. p.185. Yan, X., & Yang, J. (1999). *Fuelling the 21st Century China: the Report on Improving the International Competitiveness of Chinese Petroleum Industry (In Chinese)*. Beijing: The Enterprises Management Publishing House. Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.123 "Norway's Statoil played a significant role in shaping China's thinking on this issue but the MPI also studied the experiences of England, Indonesia, and other places"

MPI, and a large number of refineries and petrochemical plants belonging to local governments. Similar to CNOOC, the NOC was an administrative style corporation with both operational activities and regulatory and administrative functions.

The establishment of Sinopec was mainly driven by the central government's effort to regain control of revenue from regional government. By taking over the ownership of refineries and petroleum plants that belonged to the local governments, the central government ensured itself the access to lucrative revenues generated by these plants.[321] The lower domestic crude prices regulated by the government could ensure the profit level of refineries and therefore the revenue income of the central government. To justify the move, the central government also argued that it was a more effective way for utilising limited resources and in building a strong national petrochemical capacity.[322]

5.2.2.4 The establishment of CNPC (1988)

CNPC was established in 1988 on the basis of the previous MPI (excluding the assets that were transferred to CNOOC). This move was part of the general regulatory reforms, in order to reduce the direct governmental intervention in the economy.[323]

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[321] Nolan, P. (2001). *China and the Global Business Revolution*: Palgrave.p.446

[322] Yan, X.-C. (1998). *The Grand Restructure of the Chinese Petroleum Industry (In Chinese)*. Beijing The Petroleum Industrial Publishing House. p.20, 209

[323] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.171

Although the government claimed that the main objective of CNPC was profitability, CNPC was, similar to CNOOC and Sinopec, an administrative NOC with operational and regulatory functions. It was a legal person, with administrative status, and was under direct control of the State Council.[324] The head of the petroleum sector continued to be a political appointee of the central government. This position continued to be of an administrative rank, and incumbents expected their next post as cabinet ministers or governors of a province.[325]

CNPC played an important role in supporting the SPC in drafting long-term planning, and making decisions on investment and production, by providing basic information, submitting proposals of major projects, and forecasting of the oil and gas demand and supply in the country. CNPC formulated the strategic plans for the whole onshore petroleum industry, devised the long and middle-term production planning for the industry, and submitted the same for approval from SPC. The headquarters of CNPC also supported the SPCs in the marketing of petroleum by formulating transportation and allocation plans for the whole country, and was responsible for the coordination and enforcement of the approved distribution plans.[326] The headquarters of CNPC had to coordinate with Sinopec to allocate crude oil to Sinopec's refineries based on the annual oil allocation plan established by SPC, CNPC and Sinopec.

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[324] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.78

[325] Ibid. p.89

[326] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.82

The headquarters of CNPC also supported SPC and MOF in financing the petroleum sector.

The CNPC headquarters still played an important role in resource management. Due to the insufficient capacity of MGMR, almost all resource licenses were issued to the MPI/NOCs over a long period of time, with only negligible number of small blocks in Shaanxi province being assigned to the local governments or enterprises. As a result, the management of resources to ensure a proper development rate was largely left in the hands of the MPI /NOCs. It was also responsible for sector specific standards and rules, although most of these were required to be ratified by relevant ministries in the government. Examples included the national quality standards for oil industry, the policy for environmental regulation and the sector specific accounting principles.

5.2.2.5 The involvement of foreign companies

Another notable change of the industrial structure of the Chinese petroleum industry was the opening up of a small share of reserves for foreign companies. The Chinese government started to bring in foreign oil companies to participate in the petroleum activities since the end 1970s, driven mainly by the concerns over reduced petroleum reserves and production capacity, and lack of capital investment.[327] Chinese

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[327] Shi, D. (2006). *The Research Report of Marketisation Reform of the Energy Industry (In Chinese).* Beijing: Economy and Management Publishing House. p.219. This move was also underpinned by the prevailing optimistic opinion towards the prospects of petroleum reserves in the country. The offshore and Western onshore regions were believed to be the top two prospective areas in the country. there was once an optimistic predictions that "China's offshore hydrocarbon could be as much as those of North Sea". The

government had hoped that the country would be able to develop the technically challenging oil reserves in offshore and Western onshore regions with foreign capital and technology, to succeed the maturing eastern and northern oilfields.[328]

The petroleum sector was attracted by the capital, technology, and increased production that foreign players could bring, but was also concerned about threats posed by foreign players. As a result, the NOCs not only opposed the issuance of high quality blocks to foreign companies, but also insisted on their dominant roles in joint ventures with foreign participants. Therefore, blocks set for foreign cooperation were small and remote. All foreign involvement in Chinese petroleum sector had to be conducted through cooperation with either CNPC or CNOOC based on Production Sharing Agreement ("PSA") system.[329]

5.2.2.6 The internal structure of the NOCs

During this stage, the internal structure of NOC was similar to the previous stage. Taking the example of CNPC, during corporatisation process, the previous PABs were transformed into oil and gas production enterprises (will be referred to as business unit

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international players were also eager to involve in the petroleum sectors of China following the deterioration of Iran situation and the central government was also prone to an open door policy.

[328] Sun, X. (1999). The Development of China's Petroleum Policy: from Import-Dependency to Sustainability. University of Dundee, Dundee. p.172. The offshore and western onshore opening did not happen at the same time. The government stated by opening less controversial offshore operations first in early 1980s. It was the failure of the offshore operation to generate prospects that drove the government to open up onshore blocks (By mid 1980s, the offshore oil production only account for about 5% of the national production.) In 1985, the government opened the 11 southern onshore provinces for foreign cooperation under No. 23 documents issued by the State Council in 1985.

[329] Sun, X. (1999). *The Development of China's Petroleum Policy: from Import-Dependency to Sustainability*. University of Dundee, Dundee. p.173

"BU"). Trial measures were adopted to increase the autonomy of them in investment and financial management. However these new enterprises still undertook responsibilities similar to those in the previous stage, including operational and social functions. In theory the relationship between the headquarters of CNPC and BUs remained similar to the previous stage, with the headquarters of CNPC still conducting a direct administrative style management in governing its subordinate enterprises.

The company was still organised in a highly decentralised management model. However, significant power had been retained by BUs along with the removal of the Party's control in their daily investment and productivity activities. This together with increased autonomy of BUs resulted in imprudent investment and weak cost control, reflected by rapid expansion of assets in irrelevant activities and complicated corporate structures.[330] This further increased the difficulty of the headquarters in exerting an efficient monitoring and control system over the BUs.[331] For example, the Zhongyuan oilfield in the 1990s had more than one hundred independent subsidiaries under the direct management of this BU. Each had its own bank account and managed its own business. Additionally, further divergent interests between the headquarters and the BUs intensified the negative effects of the decentralised business pattern, as BUs were more likely to pursue their own interests at the cost of the headquarters.

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[330] Jia, Y., Xiao, Y., & Guo, T. (2005). *Budget and Cash Management (In Chinese)*. Beijing: Commercial Publishing House. p.226.

[331] Ibid. p.227. For example, in 1986, Shengli oilfield imported a water injection facility from UK, at a cost of RMB 12.1 mn, which was never put into use due to a miscalculation of input indicators such as power pressure during feasibility study stage.

5.2.2.7 Conclusion

During this stage, the industrial structure of the petroleum sector began to change during this stage. Firstly, the former specific line ministries had been corporatised and transformed into several NOCs with regulatory and operational functions. A new industrial structure was established characterised by several NOCs playing a dominant role in their respective fields. CNOOC was in charge of the offshore oil and gas business, CNPC was in charge of the onshore oil and gas business, and Sinopec was in charge of the downstream refinery and petrochemical business. This move reflected the intention of the government's to reduce its direct role in the sector.

The newly established NOCs performed similar regulatory functions, as well as productive functions as the previous MPI. BUs still took operational, supporting and social responsibilities in the same manner as they did before. However, as the NOCs and their BUs enjoyed an increasing level of autonomy during this stage, the negative symptoms of the P-A problem when agent pursuing their own interest at the cost of their principal started to become serious.

Furthermore, due to the pattern of strong NOCs and weak government capacity, the petroleum sector started to influence the government and to lobby for policies for its best interests. For example, similar to many oil producing countries, the Chinese government brought in foreign investors for the purpose of technology, capital, and managerial skills. However, the foreign involvement in China was never as significant

as in many other countries, partially because of the strong objection from the NOCs, and partially because of the government's conscious decision of trusting domestic players rather than foreigners, especially in the sensitive resource sectors.

5.2.3 The reforms of the pricing and distribution systems

During this stage, the pricing and distribution systems of petroleum were partially liberalised, driven by the overall economic reform, as well as the need to address the financial shortage faced by the NOCs. The reforms during this stage took an extremely cautious and experimental path, mainly influenced by the concerns of the government over the possible economic, social and political impacts of the policy change, and the lack of suitable national capacity. After the reform, a small amount of crude oil and oil products were allowed to be sold at a market or quasi-market prices, outside the government controlled distribution system. The major share of crude oil and oil products was still distributed by the government controlled distribution system, at the government regulated prices.[332]

5.2.3.1 The pricing and distribution systems (crude oil)

For crude oil, dual and multi-pricing systems were implemented by liberalising a small share of oil prices and allowing the existence of two or more bands of prices.

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[332] Shi, D. (2006). *The Research Report of Marketisation Reform of the Energy Industry (In Chinese)*. Beijing: Economy and Management Publishing House. p.230

The government regulated prices: During this stage, a major share of crude oil was still sold at **government regulated low prices**. The price level had remained unchanged since 1971 (table 5.5), and was far below the level of international crude oil prices.[333]

Table 5-5 The government regulated prices for crude oil (1971 to 1987)[334]

Location	Prices RMB Yuan/ton	US equivalent $/bbl	Brent price[335] $/bbl
Daqing, Shengli, Dagang, Liaohe, Jilin,	100	3.7	18.4
Xinjiang ,Qinghai,	115	4.2	18.4
Yumen, Sichuan, Jianghan	130	4.8	18.4

The dual price system (1981-1985): In 1981, the government started to allow the petroleum sector to sell their excess production, over their production targets to overseas at the international prices, or to the domestic market at **government regulated export prices** set by the government equivalent to that of the international level.[336] Under the new system, most of the crude oil exceeding production target was exported, at the international price level, which was nearly 4 to 6 times of the domestic level (table 5.5 and 5.6).[337] During this stage, crude oil remained to take different prices based on factors such as quality and location.

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[333]Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press. p.83. Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.6

[334] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House.p.6. The US equivalent is calculated by the author based on the foreign currency rate prevailing in 1987 and the conversion factor of 1ton = 7.3 bbl. Using the foreign exchange rate of 1987

[335] The price level for Brent in 1987.

[336] During this stage, although in theory this price should be similar to the international prices, the government had kept it lower than the international prices.

[337] Shi, D. (2006). *The Research Report of Marketisation Reform of the Energy Industry (In Chinese)*. Beijing: Economy and Management Publishing House. p.230

Table 5-6 The government regulated export prices [338]

Year	Daqing oil (RMB yuan/ton)	USD Equivalent ($/bbl)	Shengli oil (RMB yuan/ton)	USD equivalent ($/bbl)	Brent oil ($/bbl)
1982 (period 1)	644	47	532	39	33
1982 (period 2)	620	45	520	38	33
1983	590	41	490	34	30
1984	545	32	475	28	29
1988	555	20	485	18	15

The multi-price system (1986-1993): In 1986, the international oil prices declined sharply, the amount of oil being export was reduced. Hence the NOCs faced financial problem again. To address this, the government introduced the third band of **government regulated high oil prices**, higher than the regulated export oil prices, applied to a small share of crude oil sold to Sinopec by CNPC.[339] For example, the new regulated high price for Daqing oil was RMB 660 yuan/ton in 1989, compared to RMB 127 yuan/ton of regulated low price, and RMB 555 yuan/ton of regulated export price. By then, a triple-track pricing system came into being.

The government also gradually increased the level of the regulated prices from 1988 to 1993 to relieve the financial burden of the NOCs, in response to their strong lobbying. The regulated low and high prices were increased by RMB 10 yuan/ton in 1988 and by

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[338] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.10. The conversion factor: 1ton =7.3 bbl, the foreign currency of the year was used to convert USD equivalent of oil prices of each specific year.

[339] Shi, D. (2006). *The Research Report of Marketisation Reform of the Energy Industry (In Chinese)*. Beijing: Economy and Management Publishing House. p.230

an average of RMB 34 yuan/ton in 1991.[340] The regulated low prices were increased by an extra RMB 27 yuan /ton in 1989. Meanwhile, each year the government increased the share of crude oil allowed to be sold at the regulated high prices. From 1991-1992, 25.4 mn tons of oil was lifted. Despite the above piece-meal attempts at increasing the price level for crude oil, the average prices for domestic crude oil were still much lower than the international prices (table 5.7).

Table 5-7 Comparison of the domestic and international prices (1981-1996)[341]

Year	Average oil prices (RMB yuan/ton)	FX rate (USD /RMB Yuan)	Chinese oil prices in USD/bbl	Brent prices USD/bbl
1981	102.2	1.7051	7.99	35.93
1982	115.58	1.8926	8.72	32.97
1983	127.21	1.9767	9.19	29.55
1984	162.64	2.3270	9.98	28.78
1985	201.49	2.9367	9.80	27.56
1986	174.56	3.4528	7.22	14.43
1987	196.23	3.7221	7.53	18.44
1988	205.11	3.7221	7.87	14.92
1989	247.18	3.7659	9.38	18.23
1990	291.17	4.7838	8.70	23.73
1991	333.95	5.3227	8.96	20.00
1992	376.01	5.5149	9.74	19.32
1993	546.26	5.7619	13.54	16.97
1994	756.23	8.6187	12.53	15.82
1995	871.63	8.3507	14.91	17.02
1996	946.48	8.3142	16.26	20.67

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[340] Zhou, M., Lu, L., & Chai, S. (2005). *Accounting and Information System (In Chinese)*. Beijing: Commercial Publishing House. p.23
Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.11

[341] BP. (2006). "BP Statistical Review of World Energy 2006." Retrieved 21 Jan 2007, from http://www.bp.com/productlanding.do?categoryId=6842&contentId=7021390.Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.19

5.2.3.2 The pricing and distribution systems (oil products)

Reforms of oil products maintained a similar trend to that of crude oil through the introduction of dual and multi price systems. However, the government increased the prices for oil products at a much faster pace than crude oil.

From 1978 to 1983, the government set prices for most oil products. The price level was low and maintained almost unchanged since 1970s (**government regulated low price**). Since 1983, the government allowed the oil products produced from higher priced crude oil to be sold at a higher price regulated by the government (**government regulated high price**) and sold to the government controlled distribution system.[342] By 1993, most of the oil products were allowed to be sold at a high government regulated price except those meant for military and agricultural use.[343] See table 5.8 for a detailed evolution of the pricing system for oil products.

Additionally, a small share of oil products was allowed to be sold outside the central planning system to customers chosen by refineries at a price negotiated by buyers and sellers jointly (**quasi market prices**). For this amount of oil products, the government maintained the right to intervene when necessary. It did so in 1984 by setting a ceiling price for this share of products. It also intervened to reduce the price level for diesel to address a surplus of diesel in that year. In another move in 1984, the government set

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[342] Sinopec was authorised to set the prices

[343] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.28-29

ceiling prices for all major oil products to curb inflation.[344]

In 1993, 9% of oil products produced by Sinopec and 5% of oil products produced by CNPC were allowed to be sold outside the government regulated distribution system.[345]

In response to these measures, a few commodity exchange markets for oil products were established in 1993 in Beijing, Shanghai and Nanjing as attempts to search for a better for price discovery mechanism.[346]

Table 5-8 The oil products pricing and distribution system (1978-1993)

Year	The pricing and distribution system	The nature of the system
Before 1983	central planning system	Factory gate price was decided by the government through the Ministry of Petroleum Industry
1983-1993	a mixture of central planning and quasi market system/ dual, multi-price system	Factory gate price was regulated by the government through Sinopec;
		The wholesale and retail prices for oil products was regulated by the Ministry of Commerce based on cost + profit method
		Although the government regulated most of the prices and the allocation of oil products, a small amount of oil products was allowed to be sold by the oil companies outside the government-planning system at a market price, at a higher price.

Examples of regulated price, higher price and ceiling price for a few major locations in 1988 are illustrated in table 5.9.

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[344] Ibid. p.26

[345] Ibid. p.13

[346] Dong, X., Sun, R., Zhang, H., Gao, J., Zhang, P., & Li, X. (2006). *The Research of the Reforming of the Oil Products Market Distribution System in China (In Chinese)*. Beijing: University of Petroleum, China. p.74, 116

Table 5-9 Examples of price level of 70# petrol in China in 1988

	70# petrol (yuan/ton)		
	Regulated price	High price	Ceiling price
Shenyang, Dalian, Fushun	667	930	1120
Jinzhou, Jinxi	705	968	1130
Changchun	667	958	1120
Jilin, qianguoqi	697	1005	1150
Wuhan	728	975	1140

5.2.3.3 Conclusion

The petroleum pricing and distribution systems at this stage underwent major reforms driven by the general intention of the government to enhance the efficiency of the system through liberalisation. As a result, the government gradually liberalised the pricing system for crude oil and oil products by allowing a small share of these products to be sold outside the government controlled distribution system. The government also increased gradually the level of regulated prices for both crude oil and oil products, in order to reduce the gap between international and domestic oil price levels and provide a better price signals for suppliers and consumers. These measures started to increase the autonomy of NOCs in deciding the prices for their products.

However, as has been analysed in the section 5.1, the reform was largely restricted by the national capacity of the country and by the concerns of social impact of the reform. As a result, the measures taken by the government were extremely cautions and gradual. The government still maintained major control over pricing and distribution systems for crude oil and oil products, and the domestic pricing setting mechanism was still largely isolated from the international price system with major considerations for reforms being

focused on domestic factors.

This cautions approach was helpful in maintaining stability and in minimising the social impacts of reforms, but had several negative consequences. For example, the system was still largely a government regulated system and market played only a minor role in forming prices. Meanwhile, the existence of multi tiers of prices for crude oil and oil products increased the difficulty for the government to regulate the pricing and distribution system and could potentially foster rent-seeking behaviours. Finally, the prices for oil products had been increased faster than the prices for crude oil. This policy started to squeeze the profitability of the crude oil producer CNPC and resulted in an inflated profit for Sinopec. This mismatch of price level for crude oil and oil products also encouraged over-investment in refineries which would otherwise have been economically unviable.[347] In 1995, the processing capacity for crude had reached 0.2 bn ton, which was much higher than the production capacity of 0.135 bn ton, so that most of the refineries were not operating at full capacity.[348]

5.2.4 The reform of the financial regime

During this stage, similar to the general reform of financial system, the government reduced largely the amount of direct budget injection in the petroleum sector. However, restricted by the national capacity, the NOCs still relied mainly on the government for

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[347] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.14

[348] Ibid. p.21

capital, through several special transitional policies tools, including the Exploration and Development Funds ("EDF"), the Reserve Usage Fee ("RUF"), and the Oil Maintenance Fee ("OMF") policy.

5.2.4.1 The EDF policy

In 1981, the government introduced a "Big Production Contract" to address the financial shortage facing CNPC and also to increase the autonomy of the company. EDF was introduced in the contract as a tool to raise funds for CNPC. The contract was a special performance contract signed between the government and NOCs.[349] See table 4.10 for details of this contract.[350] Through the contract, the petroleum sector committed to achieve an annual target of producing 100 mn tons of crude oil, together with several other performance indicators. The 100 mn tonnes of crude oil, according to the contract, should be sold to the government controlled distribution system at the government regulated low prices. Production exceeding the target could be sold by the petroleum sector either overseas or in the domestic market at a much higher price level (See section 5.2.3.1). The extra revenue received by the petroleum sector was required to be put in a special fund called EDF, and to be earmarked for use in exploration and development as well as the welfare of employees. The policy remained in force until 1990 and helped the petroleum sector to raise a large amount of capital investment.[351]

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[349] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.23. Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.77

[350] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.23

[351] Ibid. p.26

Table 5-10 The major content of the Big Production Contract [352]

In 1981, a proposal jointly drafted by the Energy Commission, NPC, NETC was submitted to the state council named "The report on the increased drilling and oilfield construction work needed to stabilisation of 100 mn tonnes crude oil production next year". According to the proposal, the MPI was committed to produce 100 mn tonnes crude oil per year; a "hand-over" to the state of 94 5% of actual oil output, and 90.5 general production rate for refinery (*zong shou lv*). The 100 mn tonnes oil should be sold at low regulated prices. The MPI was allowed to export the production exceeding the contract production and retain the profit (in foreign exchange) or sell it in domestic market at a much higher government regulated export price. The foreign exchange income of the MPI could be used to import advanced technology and instruments. The extra revenue gained by the industry was earmarked into special fund, 86% of which were allowed to be used for exploration and development, the rest of 15% were allowed to be used for the welfare and bonus of employee The proposal was approved by the State Council soon and this was the first sector reform taken by the government and marked the beginning of the reform of big SOEs in China.

5.2.4.2 The RUF policy

The RUF was another financial policy introduced by the government to help the petroleum sector in fund-raising, in response to a sharp reduction in international oil prices in 1986.[353] According to the policy, the petroleum sector could save certain amount of capital in a special fund for each unit of oil and gas it produced. The capital was book-kept as production cost and could be used later towards exploration and development. In 1988, the rate of the RUF was RMB 5 yuan/ton for crude oil and RMB 5 yuan/cubic meter for gas. The rate for RUF increased by RMB 27, 17 and 10 yuan in 1989, 1990 and 1991 respectively.

5.2.4.3 The OMF policy

The OMF was another financial policy established in early 1960s and remained in force

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[352] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.77

[353] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.25

throughout this stage. The mechanism of OMF was similar to that of RUF, according to which the petroleum sector was allowed to put aside certain amount of capital in a special account to ear-marked for use in small scale production maintenance activities during the production stage.[354] Similar to that of RUF, it was accounted as production cost.

5.2.4.4 Direct subsidy

In addition to the above policies, from 1988 the oil sector received subsidies from the government, to cover its continuous deficit partially caused by the government regulated price mechanism (See table 5.11).

Table 5-11 The deficit and subsidy of CNPC (1988-1993)[355]

Unit RMB bn

Year	CNPC deficit	subsidy from MOF
1988	0.74	0.16
1989	3.87	3.92
1990	5.59	4.97
1991	5.28	4.88
1992	9.26	5
1993	2.63	2.7
Total	27.37	21.63

5.2.4.5 Conclusion

During this stage, the financial relationship, in theory, progressed towards being more market driven, with funds provided by the government to NOCs being reduced and

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[354] Zhou, M., Lu, L., & Chai, S. (2005). *Accounting and Information System (In Chinese)*. Beijing: Commercial Publishing House. p.10, 13

[355] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.172

NOCs moving towards being self-reliant in raising funds. However, due to the lack of the regulatory capacity of the government, the market capacity and immaturity of other reforms, such as the liberalisation of price and market, as well as the enforcement of market driven accounting standards, which enabled enterprises to recover investment through cost accounting, the NOCs still lacked commercial ability, and therefore had to rely mainly on the government for most of their capital requirements through several transitional financial policies (table 5.12). The capital raised by the petroleum sector from retained profit and bank loans still counted for only a small share of the total capital needs, despite the government's encouragement for the petroleum sector to utilise domestic and foreign loans.[356]

Table 5-12 The total investment and its sources[357]

Unit: RMB bn, %

Year	Total investment	State Budget	OMF	EDF	RUF	Sub total	% of state investment
1988	21.44	2.38	3.82	6.55	0.66	13.41	62.5%
1989	25.13	1.42	4.18	6	3.52	15.12	60.2%
1990	26.83	1.91	4.58	6.39	6.29	19.17	71.4%
1991	30.59	1.91	4.93	7.65	8.08	22.57	73.8%
1992	36.59	1.63	5.26	12.29	8.41	27.59	75.4%

5.2.5 The reform of the fiscal regime

The reforms of the fiscal regime in the petroleum sector bore the hallmarks of the principles of the general fiscal regime reform. Similar to other sectors, the reforms of the fiscal regime in the petroleum sector were conducted gradually to take national

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[356] Interview of a former finance officer of the Ministry of Petroleum Industry conducted in Beijing in 2006 "From 1981, the oil industry had borrowed the Japan Energy loan, Japan Commercial loan, and World Bank loan for its investment under the support of the government"

[357] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.171, CNPC year book (1997)

capacity into consideration and to maintain stability and. The system experienced two rounds of "tax for profit" initiatives, following which the share of taxation increased and the share of profit remittance by the NOCs reduced in the overall revenue income of the government.

5.2.5.1 The reform of the corporate income tax

During the first round of "tax for profit" initiatives in 1983, a 55% income tax was levied on the petroleum sector in the first instance. Thereafter, the net profit from the first step was subject to a certain level of profit collection. The income tax plus profit collection equalled to the total remittance the petroleum sector submitted to the government before the reforms. In 1984, a second round of "tax for profit" reforms was launched and the direct profit remittance in the second level of the first round was completely substituted by taxation. Thus, in addition to the 55% income tax, the government thereafter collected another round of "profit adjustment tax" so that the tax revenue of the government remained almost the same as the previous years. The rate of the profit adjustment tax was therefore calculated based on the government share of after profit in 1983. For example, if the total profit of the petroleum sector in 1983 is RMB 100 bn, the government collected 55% income tax amounting to RMB 55 bn, and another RMB35 bn on the remaining RMB 45 bn, so that the rate of the profit adjustment tax was 35/45=78%. This rate of profit adjustment tax was then fixed from 1985 to 1990.[358]

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[358] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial

5.2.5.2 Other new taxes

In addition to the Income Tax, the government also introduced a wide range of new taxes to be applied to the petroleum sector. For example, the energy and transportation keypoint fund was introduced in 1983. The products tax, the business tax, and the resource tax were introduced in 1984. The land usage tax was introduced in 1988. The budget adjustment fund was introduced in 1989. The fixed assets investment adjustment tax was introduced in 1991. Many other taxes were also introduced at this stage.[359]

5.2.5.3 Conclusion

The fiscal regime reform that took place in the petroleum sector was an application of the general fiscal regime reform of the country to the sector. By the end of the period, taxation had substituted direct profit remittances as the main mean to extract revenue from the petroleum sector. In 1981, only a few minor taxes applied to the petroleum sector, and the taxes paid by the petroleum sector in 1981 was only 0.69 bn yuan. By 1990, seventeen taxes and fees were applied to the sector, which thus paid 5.38 bn yuan in taxes (see table 5.13).[360] Due to the weak national capacity of the country, especially the lack of regulatory and market capacity, the tax rates in the newly established system were mainly based on the previous tax burden borne by enterprises.

Publishing House. p.172

[359] Ibid. p.178

[360] Ibid. p.179

Table 5-13 Tax paid by the petroleum industry (1981-1990)[361]

Year	Crude oil production	Sales revenue	Tax paid	Tax burden/income	Tax burden
	mn tones	RMB bn	RMB bn	%	RMB yuan/ton
1981	101	12.8	0.69	5.39	6.83
1982	102	13	1.04	7.97	10.2
1983	106	14.2	1.4	9.85	13.21
1984	115	15.2	2.04	13.41	17.74
1985	125	16.9	3.53	20.85	28.24
1986	130	17.9	3.73	20.78	28.69
1987	134	18.8	4.04	21.46	30.15
1988	136	20.9	4.71	22.57	34.63
1989	137	25.6	5.36	20.94	39.12
1990	137	29.4	5.38	18.27	39.27

5.2.6 The P-A relationship formed by the reforms

During this stage, the government still remained a major player in the reforms of the NOCs and the petroleum sector. The main targets for the government to reform the petroleum sector were to enhance its commercial performance. Meanwhile, restricted by the national capacity, especially the weak regulatory and market capacity of the country, also concerned with the social impact of reforms, the government took a cautions and administrative style of reforms measures.

Another notable phenomenon during this stage was the increasing influence of the petroleum sector in the decision making process of reforms, due to their increasingly separate identity from the government and degree of autonomy. This was clearly shown in the industrial structure reforms, when NOCs opposed significant foreign involvement,

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[361] Ibid. (Tax paid figure in the table do not include income tax)

and in the fiscal regime reform, when they lobbied to increase oil prices as well as funding from the government.

5.2.6.1 The tasks of the petroleum sector

The petroleum sector during this stage was assigned with more autonomy although only marginally, in marketing their products, retaining their revenue, disposing their after-tax profit, as well as raising capital. Accordingly, there had been an increasing emphasis on profitability indicators in measuring the performance of the petroleum sector. However, production was still assigned to the petroleum sector as the major performance task due to weak national capacity and the practice of assigning NOCs with regulatory and social functions. Furthermore, the lack of a market system in forming prices and allocating products, together with the lack of a market style accounting system, were the major factors attributing to this situation.

In addition to the productive responsibilities, the petroleum sector still took regulatory, administrative and social functions, due to the weak regulatory capacity of the government to take over these functions, and due to the social considerations of the government. These considerations also prevented the government from conducting more radical market-driven reforms in the pricing and distribution systems, as well as in the fiscal and financial regimes.

5.2.6.2 The supporting system

The system of direct control and monitoring still served as a major mechanism for the government to govern the petroleum sector. The government still tightly controlled the majority of investment and production plans, contributed to a majority of capital and collected a majority of profit. It also set the price for a majority of oil, and controlled the distribution system.

However, the control of the government over the petroleum sector had been weakened due to the increasing size, autonomy, and the separate identity developed by the sector, as discussed in section 5.1, the increasing difficulty to regulate the sector due to the transitional style reforms,[362] and the removal of the party control over daily operations of SOEs by the government.

The role of material and commercial incentives started to increase as the government started to emphasise more on commercial performance of NOCs. The moral incentive had to a large extent been abandoned as the mentality of people had changed significantly.

5.3 The evaluation of the reforms

As has been analysed in section 5.1, the major objective of the government to reform the petroleum sector was to apply general principles of the economic reform to it, in

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[362] This is partially caused by the complicated dual and multi-price systems.

order to enhance its commercial performance. This objective by itself represented progress compared to the previous stage when the government emphasised production rather than profitability due to challenges it was facing. To achieve the target, the government set commercial performance mainly reflected by profitability as the major target of the NOCs. Also, the government had undertaken reforms that should have had a positive impact on the commercial performance of NOCs, including corporatisation, increased autonomy and material incentives for NOCs, and partially liberalised pricing and distribution system.

In addition to the above target of reform, the government also wanted to maintain stability during reforms, and minimise the negative economic and social impacts of the reforms, and employ practical measures in reforming NOCs which is compatible to the national capacity of the country during this stage. As a result, the reforms during this stage was effective in accommodating the second reform target, but was less effective in addressing the first objective, which could be reflected by the rising deficit of CNPC (table 5.14).

Table 5-14 The Profit of CNPC (1988-1993)

Year	After-tax profit
	(RMB bn)
1988	-0.74
1989	-3.87
1990	-5.59
1991	-5.28
1992	-9.26
1993	-2.63

From the task perspective, the government had to use production as a primary performance indicator to measure the performance of the NOCs, restricted by national capacity, especially the lack of a effective price signals, a market style accounting system, and the regulatory capacity was the major factors attributing to the situation, as mentioned in section 5.1 and 5.2. As a result, the petroleum production continued to rise, although modestly (table 5.15).[363] Similar to the situation in the previous stage, the use of a production indicator could impede the commercial performance, as economically unviable petroleum could be produced. Furthermore, driven by the need to enhance productive performance, the NOCs were more likely to pursue their own exclusive interests by arguing for more budgetary allocations and other favourable terms from the government, resulting in poor investment and cost management. Additionally, the practices of assignment of NOCs with regulatory, administrative, and social responsibilities gave rise to "conflict of identity" and "multi-task" effects and could have a negative impact to the commercial performance of NOCs.

Table 5-15 The Production and Reserve Indicators (1980-1993)

	Oil production (mn tones)	New production capacity (mn tones/year)	Geological reserve (bn tones)
1980	105.77		
1985	124.79		
1988	136.19	15.8	13.5
1989	136.64	17.1	13.9
1990	136.92	13.3	14.3
1991	137.22	14.9	14.9
1992	138.02	15.1	15.3
1993	139.13	15.4	15.7

[363] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.20, 26

From the incentive perspective, the government increased performance-linked material incentive, which was in accordance with the changing mentality and ideology of people during this stage. This was a positive aspect which took full account of the fact that the Cultural Revolution had damaged the trust of people in the communist ideology to some extent; therefore the moral incentive used in the previous stage was no longer effective. The continuous economic reform and the uncertainty caused by the chaos in the previous stage not only increased the sense of insecurity but also triggered the desire for material wealth, which made material incentive a more useful tool. However, the effectiveness of the incentive system was restricted by the nature of the tasks of the NOCs, and the ability of measuring these tasks by the government as discussed in the previous paragraph. As a result, it was hard to measure the mixture of the productive, regulatory and social tasks of the NOCs, without an effective accounting system.

The monitoring and controlling system also had its weaknesses. On the one hand, too much control restricted the autonomy of the petroleum sector, and could therefore fail to mobilise the sector to enhance its commercial performance. On the other hand, as discussed in section 5.2, new system was in fact weaker than before, due to the relative weak capacity of the government and growing power and separate identity of the NOCs. The ineffective accounting system failed to generate timely and accurate information and thus worsened the situation. The petroleum sector, different from other sectors, still used a soviet-style accounting system, which emphasised quantity rather than

efficiency.[364] Further, under the current accounting system, the cost management was left mainly in the hands of the BUs. Meanwhile, the scope of the expenditure eligible for this category was not well-defined. As a result, the petroleum sector could benefit from the escalation of costs.[365]

To conclude, the government had the intention of placing commercial performance at the top of the agenda of the petroleum sector, and had conducted positive reform measures such as partial liberalisation of pricing and distribution systems, improvement of fiscal and financial systems, and the creation of NOCs as well as the enhancement of the their autonomy in their commercial operations. These represented positive progress compared to the previous stage. These reforms also resulted in the increase of the divergence betwen the government and the NOCs' interest. Additionally, the tasks, incentives, and monitoring systems were insufficient to support the objective of the government to enhance the commercial performance of the NOCs. This weakness, however, could mainly be attributed to the insufficient national capacity of the government, especially the weak market system which restricted the formation of effective price signals and the lack of a market style accounting system which restricted the ability of the government in accessing information and measure the real performance of the NOCs.

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[364] Zhou, M., Lu, L., & Chai, S. (2005). *Accounting and Information System (In Chinese)*. Beijing: Commercial Publishing House. p.10-16. The accounting standards applied to the petroleum sector during this stage were a mixture of the Russia foundation and Chinese development in response to specific challenges the country facing. It was designed to support the soviet style central-planning system, therefore it emphasised on quantity rather then efficiency.

[365] Ibid. p.114

6 NOC REFORMS IN CHINA- STAGE THREE (1993-1998)

The period from 1993 to 1998 marked a new era in the history of Chinese economic reforms, due to the adoption of free market ideology, and the election of Vice Premier Zhu Rongji, whose policy-making style was significantly different from his predecessor, being "stronger and more decisive".[366] The government was able to conduct more radical market reforms that were not possible during the previous stage, due to ideological restrictions. There were not only radical changes in the fiscal regime, pricing, accounting, and investment system in the country, but also more fundamental reforms of SOEs, which were left behind compared to non-public enterprises due to ideological reasons. Along with these reforms, the national capacity of the country was enhanced greatly, which enabled a more radical reform of the regulatory framework, the industrial structure, the pricing and distribution system, as well as the fiscal and financial systems of the petroleum sector. However, the government's failure to build up sufficient regulatory capacity to regulate a much liberalised market, increasing security of supply risks, and the social impacts of reforms restricted the government's choice of reform measures.

This chapter begins by analysing the general background of the petroleum sector during this period, including the general economic background of the country, the productivity,

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[366] Naughton, B. (2006). *The Chinese Economy: Transitions and Growth.* Cambridge, Massachusetts; London, England The MIT Press. p.100

consumption, and other factors of the petroleum sector, as well as national capacity of the country during this stage. This is followed by the introduction of the new P-A relationship established between government and NOCs during this stage. The chapter concludes with an evaluation of the reforms conducted by evaluating the effectiveness of the relationship.

6.1 The general background

This section will analyse the new economic ideology adopted during this stage, as well as several major elements of the economic reforms, including the establishment of new economic rules and the reforms of SOEs, together with changes in productivity and other factors of the petroleum sector, as well as the national capacity. By analysing this change of factors, this section examines the challenges and opportunities facing the Chinese government in regulating the petroleum sector and their reform objectives.

6.1.1 A breakthrough in economic ideology

There was a breakthrough in economic ideology in China during this stage, which enabled the country to conduct further market-driven economic reforms. As discussed in the previous chapter, the economic reforms in the previous stage remained extremely cautious and terms such as "market reforms" were carefully avoided, and terms such as "commodity economic reforms" were used to prevent ideological clashes with the socialist nature of the country. This situation started to change when the concept of "socialist market economy" was ratified by the communist party and was adopted in the

country's Constitution.[367] Accordingly, the government was able to promote economic development at all cost.

This ideological breakthrough was partially caused by the pressure facing the government due to years of sluggish economic performance from 1989 to 1991. It was also pushed by the forward-looking leader Deng Xiaoping, whose high profile trips to several coastal cities in Southern China and his milestone speeches sending out a clear message to promote market-driven reforms.[368] The rise of Vice Premier Zhu also resulted in the adoption of more decisive measures towards a market economy. He emphasised the importance of establishing market rules to provide a level field for all players therein, reforming of SOEs to enhance their performance, as well as enhancing the role of government as an effective regulator. Thus, unprecedented economic reforms which could not have been implemented during the previous stage took place in China under these circumstances and they greatly enhanced the market capacity of the country and increased the regulatory capacity of the government.[369]

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[367] The fourth session of the fourteenth communist party conference approved the "Decision of the China Communist Party central committee on some issues concerning the Establishment of a socialist market economy structure". To avoid ideological controversy, the government carefully coined the term "Socialist market economy" which is defined as a transitional reform plan with the market as the final target and with socialist as the approach and transitional guideline. See Chiu, B., & Lewis, M. K. (2006). *Reforming China's State-Owned Enterprises and Banks*. Cheltenham, UK.Northampton, MA, US: Edward Elgar. p.41

[368] Wang, H. H. (1999). *China's Oil Industry and Market*: Elsevier. p.2. People'sNet. (2001). The Term of "Three Benefits" (In Chinese). Retrieved 19 Mar, 2007, from http://www.people.com.cn/GB/shizheng/252/5303/5304/20010626/497655.html. The government issued three criteria in justifying reform measures, according the criteria, economic reforms should benefit the productivity of the country's economy, the overall national power, and the living standard of Chinese people.

[369] Yusuf, S. (2005). *Under New Ownership: Privatizing China's State-Owned Enterprises*. Herndon, VA, USA: World Bank. p.69. Yuan, B.-H. (1999). The Review of a Few Issues of Socialism Economic of China in the Last 50 Years (In Chinese). *The Research of Modern China History, 5-6*.

6.1.2 The establishment of market-driven economic rules

The government further liberalised the economy by increasing the role of the market in setting prices for commodities and allocating them. Accordingly, the government established new market rules to support such a market-driven economy, through reforms of the fiscal regime, of accounting standards and of the financial system. Different from the piecemeal style reforms in the previous stage, many reforms during this stage took the form of a radical step, driven by the strong political will of the government to further liberalise the economy.

6.1.2.1 The pricing and distribution reforms

The pricing and distribution systems for commodities were further liberalised, with the share of materials allocated by the government being reduced rapidly. The distribution of most of the commodities was now left to the market, except for a few strategically important commodities, such as energy and water. The dual and multi track pricing systems prevailing in the previous stage were gradually abolished.[370] Furthermore, the government started to allow the domestic pricing system to become more closely linked to the international price system, as the country's economy was further integrated with the global economy.[371]

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[370] Naughton, B. (2006). *The Chinese Economy: Transitions and Growth*. Cambridge, Massachusetts; London, England The MIT Press. p.101

[371] Yusuf, S. (2005). *Under New Ownership: Privatizing China's State-Owned Enterprises*. Herndon, VA, USA: World Bank. p.70. *A special policy of the Chinese government to further integrate with the global economy was the principles of full utilisation of both domestic and foreign market and resources, the so called "two markets and two resources" policy issued by the central government in 1993.*

6.1.2.2 The reforms of the fiscal regime

In 1993 a completely new market styled fiscal regime was implemented in China, which was more transparent, fairer and easier to implement than the previous ones (the detailed rules of the new taxation system are shown in the table 5.1).[372] Taxation was established as the major means of revenue collection by the government, as the practice of profit remittance of SOEs had been largely abolished. Measures were taken to simplify the taxation rules by removing the practice of applying different taxes and tax rates to players operating in different sectors, and with different scales and ownership structures. The VAT, which was "uniform for enterprises of all ownership types", became the major source of revenue for the government.[373] The universal taxation regime could provide a better basis for all players to compete with each other, regardless of their ownership structure.[374] The new system also enhanced the controlling power and revenue income of the central government,[375] and improved the tax collection and tax administration procedure.[376]

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[372] Zhang, Y., & Fuke, T. (1997). *Changing Tax Law in East and Southeast Asia Towards the 21st Century'*: Kluwer Law International. p.42. The new system established the role of turnover tax including Value added tax, Consumption tax and business tax, and income tax being the major taxes in the country. The aims of the reform, according to the government was to unify the taxation law, realise a fair burden of taxation for market player, simplify taxation administration system, optimise the allocation of taxes income of central and local government, ensure the fiscal income, and establish the taxation system that is suitable for the socialist market economy. Jia, K. (2000). The Analysis and Review of China's Fiscal Regime Reform (In Chinese). *The academic newspaper of He Nan Fiscal and Taxation Institute, 14*(1).

[373] Yusuf, S. (2005). *Under New Ownership: Privatizing China's State-Owned Enterprises*. Herndon, VA, USA: World Bank. p.70

[374] Zhang, Y., & Fuke, T. (1997). *Changing Tax Law in East and Southeast Asia Towards the 21st Century'*: Kluwer Law International. p.42

[375] Bahl, R. (1998). Central-Provincial-local Fiscal Relationships' In D. J. S. Brean (Ed.), *Taxation in Modern China* (pp. 125-150). New York: Routledge. p.130. Yusuf, S. (2005). *Under New Ownership: Privatizing China's State-Owned Enterprises*. Herndon, VA, USA: World Bank. p.70. As has been analysed in the previous chapter, one of the outcomes of the economic reform during 1980s was the continuous reduction on the government revenue income due to the decentralisation of resource control of the government. The state revenue as a percentage of GDP reduced over the years from 31% in 1978 to 14 % in 1992

[376] Jia, K. (2000). The Analysis and Review of China's Fiscal Regime Reform (In Chinese). *The academic*

Table 6-1 The taxation reform in 1994[377]

Tax		Before reform	After reform
Turnover tax	VAT	The VAT was not imposed on the total economy but only on some products. There were 12 categories of VAT with tax rate ranging from 8% to 45%	The VAT applied to all tangible manufacturing and distribution activities of the economy and only two rates of 13% and 17% were used. The tax is not included into the price. The power of deduction and abate of the VAT remained with the central government, although VAT is a shared tax, with 75% gives to the central government and 25 gives to the local government.
	Consumption tax	Previous goods tax	The main purpose of the consumption tax was to recoup the revenue loss of the government due to the reform of the taxation system. "The tax is highly significant in implementing the state's industrial policy, adjusting the economic structure and guiding consumption in the correct direction". The tax was a central tax.
	Business tax		Business tax was imposed on certain types of businesses that were not subjected to VAT, such as the transfer of non-tangible asset and the sale of fixed assets. There were three brackets of tax rate of 3%, 5% and 5-20%.
Income tax	Enterprises income tax	Before reform, different rate and tax base was applied to different enterprises with different ownership structure. The tax rate ranged from 10% to 55%. The tax base was taxable profit: the difference of gross sales and allowable costs.	After the reform, "the division of profits between the government and the enterprises were to be determined by an objective tax system that is uniformly applied to all enterprises. Other ways of transferring profits between enterprises and government were to be eliminated". A unified tax rate of 33% was applied for all types of ownership enterprises to eliminate the uneven treatment of different enterprises. After reform, the deduction of loan payment before taxation was abolished. Wage and bonus payments became "deductible but only up to a limit.

6.1.2.3 The reforms of accounting standards

The government also reformed the accounting standards in order to increase the availability and quality of commercial information from enterprises. A completely new package of market styled accounting standards was implemented in China in 1993 and

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newspaper of He Nan Fiscal and Taxation Institute, 14(1). Zhang, Y., & Fuke, T. (1997). *Changing Tax Law in East and Southeast Asia Towards the 21st Century*': Kluwer Law International. p.42.

[377] Bahl, R. (1998). Central-Provincial-local Fiscal Relationships' In D. J. S. Brean (Ed.), *Taxation in Modern China* (pp. 125-150). New York: Routledge. p.130,138. Jia, K. (2000). The Analysis and Review of China's Fiscal Regime Reform (In Chinese). *The academic newspaper of He Nan Fiscal and Taxation Institute, 14*(1). Zhang, Y., & Fuke, T. (1997). *Changing Tax Law in East and Southeast Asia Towards the 21st Century*: Kluwer Law International. p.42

the previous "Soviet styled" accounting standard was abandoned.[378] A series of new rules covering the accounting of cost, profits and investment were issued by the MOF to formalise and unify the formerly segmented accounting practices.[379] Although still different from the prevailing international accounting systems, the new accounting standards adopted the same principles of the international standards. Under the new standards, cost accounting was clearer and easier to be monitored and audited, capital injection from different types of investors was better measured and their rights better protected, and the real performance of enterprises was easier to be measured and benchmarked with each other.

6.1.2.4 The reform of the financial regime

The financial system was also reformed by the government and the principle of macroeconomic austerity was applied, in order to curb inflation and to address the debt problems of SOEs incurred in the previous stage on account of cheap credit.[380] The major reform measures included stricter lending standards of state banks and the enforcement of bankruptcy law, according to which insolvent SOEs could in theory declare bankrupt.[381] As a result of these reforms, it became increasingly difficult for

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[378] Yusuf, S. (2005). *Under New Ownership: Privatizing China's State-Owned Enterprises*. Herndon, VA, USA: World Bank. p.70

[379] The newly issued accounting standards in 1990s included: (1) The unification of different accounting standards for different form of enterprises with different ownership structure, (2) Ten new accounting standards, (3) Western style financial statements and book-keeping methods, (4) A new capital register system, (5) A western style cost management method was adopted. (6) A standardised profit allocation system, (7) A new western style financial evaluation system.

[380] Naughton, B. (2006). *The Chinese Economy: Transitions and Growth*. Cambridge, Massachusetts; London, England The MIT Press p.304-308. By the middle 1990s, the Chinese SOEs were virtually insolvent as a result of "cash flow evaporating and debt accumulating"

[381] Ibid. p.307

SOEs to seek finance from banks without showing a good sign of profitability. The "hard budget constraint" was helpful in urging SOEs to be more responsible for their own commercial performance.[382] Despite the positive elements of the reforms, the banking sector was still passive. Furthermore, in view of the high financial savings by Chinese people, and the lack of an effective investment environment in favour of individuals, banks continued to have an ample, indeed an over supply of funds that needed to be lent out.[383]

6.1.3 The reforms of SOEs

Bolder SOEs reforms to further commercialise these enterprises were conducted during this stage. Such reforms had been carefully avoided in the previous stage, due to the ideological restrictions, the weak national capacity, and the concerns of the social impacts of the reforms. They were now made possible due to the ideological breakthrough, and the significant enhancement of market and regulatory capacity.

In 1994, the National People's Congress issued the Corporation Law of the People's Republic of China. According to the law, SOEs were allowed to be set up as independent entities, owned by the state and governed by public laws, but could act in a commercial manner similar to the private enterprises.[384]

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[382] Ibid. p.102

[383] Kynge, J. (2007). *China Shakes the World: the Rise of a Hungry Nation*. London: Phoenix. Economist. (2008). The Invasion of the Sovereign-wealth funds 2008. *The Economist, 386*(8563), 11.

[384] Chiu, B., & Lewis, M. K. (2006). *Reforming China's State-Owned Enterprises and Banks*. Cheltenham, UK.Northampton, MA, US: Edward Elgar.p.6

The government also started to enforce a new system named the Modern Enterprise System ("MES")[385] in 1994 to substitute the ineffective Contract Management Responsibility System ("CMRS"), which was used in the previous stage.[386] It was realised that due to the complex nature of the industrial activities and to the lack of regulatory capacity of the government, especially due to the lack of a market style accounting system, under the CMRS system, SOEs with private information could easily bargain for favourable performance targets, or try to achieve their targets in a way that could harm the interests of the government.[387] The new system provided for a clearer definition of property rights and a clear separation of the ownership and management of SOEs. It also encouraged SOEs to adopt western style corporate governance structures, to set up internal check and balance systems, and to adopt new management practices through a so called "scientific management system".[388] These reforms played an important role in driving SOEs to "abandon the expansionary

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[385] The MES is the "latest effort of the Chinese government attempting to clarify the position on property rights of SOEs, providing a clearer definition of rights and responsibilities between the state and the management. It has been characterized with reconstruction and restructuring of SOEs into corporations similar t their Western counterparts and introduced new management mechanism" Bai, X., & Bennington, L. (2002). *Steering and Rowing in Chinese SOEs: the Modern Enterprise System in China* Paper presented at the 15th Annual Conference of the Association for Chinese Economics Studies Australia. p.3

[386] Yuan, B.-H. (1999). The Review of a Few Issues of Socialism Economic of China in the Last 50 Years (In Chinese). *The Research of Modern China History, 5-6.* Christiansen, F. (1996). *Chinese Politics and Society: an Introduction* London: Prentice Hall/Harvester Wheatsheaf. p.228-234. Yusuf, S. (2005). *Under New Ownership: Privatizing China's State-Owned Enterprises*. Herndon, VA, USA: World Bank. p.72

[387] Yusuf, S. (2005). *Under New Ownership: Privatizing China's State-Owned Enterprises*. Herndon, VA, USA: World Bank. p.68. Bai, X., & Bennington, L. (2002). *Steering and Rowing in Chinese SOEs: the Modern Enterprise System in China* Paper presented at the 15th Annual Conference of the Association for Chinese Economics Studies Australia. p.3. Chiu, B., & Lewis, M. K. (2006). *Reforming China's State-Owned Enterprises and Banks*. Cheltenham, UK.Northampton, MA, US: Edward Elgar.p.65-87

[388] Bai, X., & Bennington, L. (2002). *Steering and Rowing in Chinese SOEs: the Modern Enterprise System in China* Paper presented at the 15th Annual Conference of the Association for Chinese Economics Studies Australia. p.3

business model and to adopt a new business model that gave top priority to cost savings and effective investment."[389]

However, radical reforms of SOEs were still restricted due to concerns over their social impacts, especially when the regulatory capacity of the government in providing social support was not mature. For example, despite the enforcement of the bankruptcy law, bankruptcy of insolvent SOEs and large scale lay-off of workers were still rare practices.[390] First of all, the government still controlled, and often kept low, the prices for strategically important goods and public goods, such as oil, gas, water, power and food on account of social concerns. The SOEs producing these goods were not allowed to go bankrupt even when they were operated at a deficit. Secondly, the large scale laying-off of workers could cause civil unrest, especially when the country lacked an effective social welfare system to substitute those provided by SOEs.[391]

6.1.4 The petroleum background: changes in productivity and other factors

The trend of strong oil consumption and stagnant production prevailing during the previous stage continued during this stage. As a result, the country became a net importer in 1993. Increasing concern over security of supply started to play an important role in shaping the thinking of the government in reforming the NOCs.

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[389] Garnaut, R., Song, L., & Tao, Y. (2006). Impact and Significance of State-Owned Enterprise Restructuring in China *The China Journal 55*, 35-63. p36

[390] Yusuf, S. (2005). *Under New Ownership: Privatizing China's State-Owned Enterprises*. Herndon, VA, USA: World Bank. p.75

[391] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.16 report on government work issued by the second meeting of the eighth peoples congress

The continuous economic growth relied mainly on energy intensive industries, and the subsidised oil prices further pushed up the country's oil demand. During the period of the eighth five-year plan (1991-1995), the energy intensive sectors such as mining, manufacturing, electricity, water, and construction grew at a high annual rate of 17.3%. Meanwhile, the oilfields in eastern China were depleting rapidly while the production capacity in west China was still immature.[392] The offshore activities also failed to bear significant additional production. Hence, the domestic growth rate of petroleum production further slowed down, and the domestic production was increasingly unable to meet the demand (Figure 6.1). [393]

China became a net importer of oil in the early 1990s and its dependency on imported oil increased rapidly.[394] This together with the lack of experience in handling international petroleum market, and the instable Middle East following the Gulf War from 1990-1991 made the security of oil supply a vital concern for the Chinese government during this stage.[395] In 1994, the government clearly specified in an official document that petroleum was "a special and strategic commodity" and the NOCs were encouraged to utilise international market and resources.[396] The policy had a significant

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[392] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.30

[393] Calculated according to the BP. (2006). "BP Statistical Review of World Energy 2006." Retrieved 21 Jan 2007, from http://www.bp.com/productlanding.do?categoryId=6842&contentId=7021390.

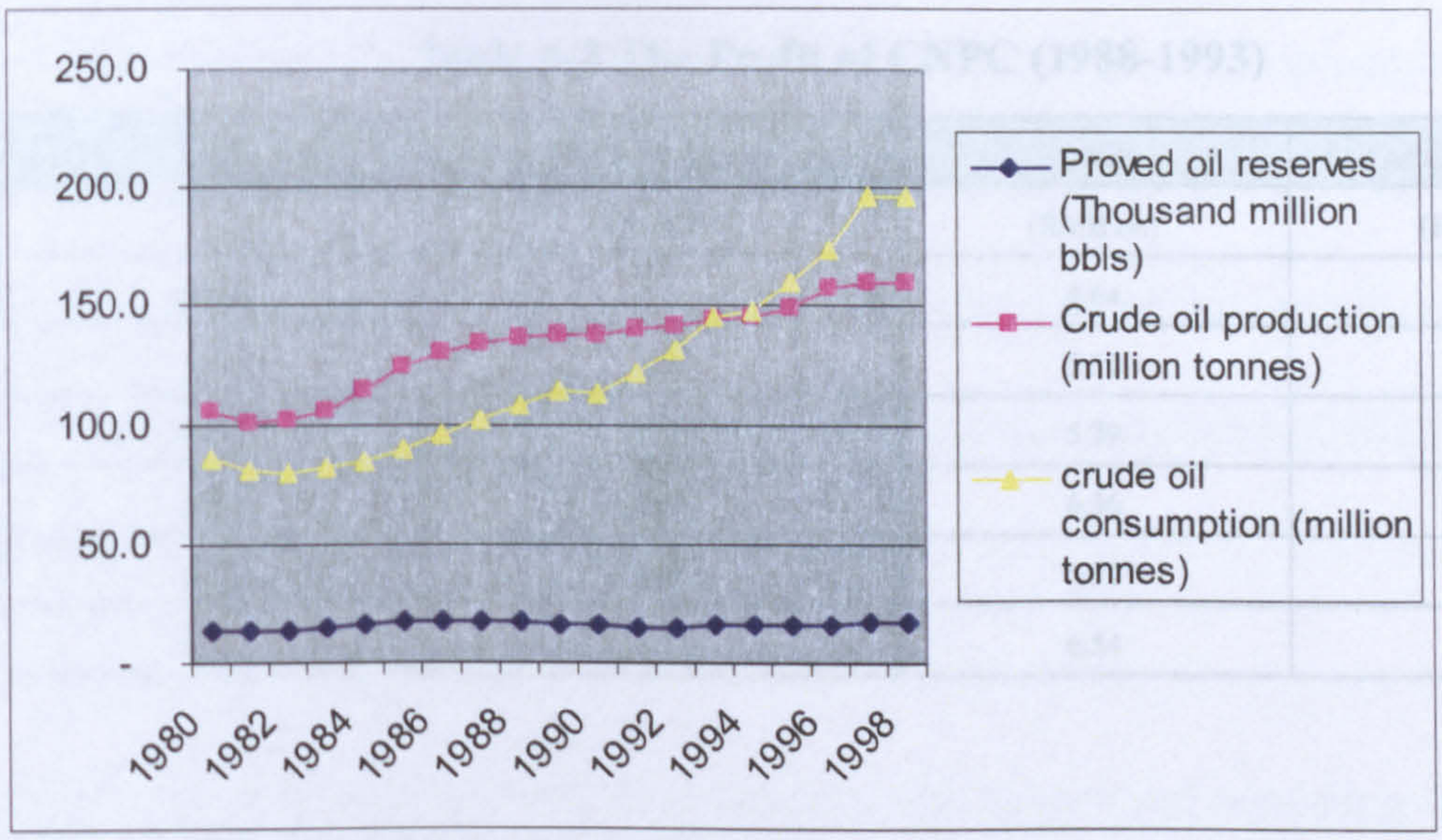
[394] Wang, H. H. (1999). *China's Oil Industry and Market*: Elsevier. Yan, C.-L. (1997). *China's Energy Development Report (In Chinese)*. Beijing China Economic and Management Publishing House. p.4. In 1995, the country spent 1.39 bn USD on buying crude oil

[395] Qiu, B. (2000). *Chinese Petroleum Sector challenging WTO (In Chinese)*. Beijing: The Petroleum Industry Publishing House.p.9

[396] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.31. China.Org. (1996). Outline of the Ninth Five-Year Plan (1996-2000) Retrieved 21

impact on the petroleum sector. It made it possible for the NOCs to operate overseas therefore helping them to build up their investment, financing, and marketing capacities.

Figure 6-1 The production and consumption of crude oil



Another major element was the further deterioration of financial position of CNPC partially due to poor commercial performance of the company resulting from imprudent cost management and investment. The company ran into continuous deficit and accumulated heavy debt since 1988 as shown in the table 6.2. In 1994, the annual capital and interest payment even exceeded the total profit of the company. In 1995, the total long term debt of the company accumulated to RMB 85.1 bn, with annual capital and interest payment liability reaching RMB 16 bn, equal to 13% of sales revenue. The company's net assets and long-term debt ratio had increased to 74.8% by the end of 1995, much higher than that of the international average (25-40%)[397]. The critical

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Mar, 2007, from http://www.china.org.cn/95e/95-english1/2.htm.

[397] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.18

financial shortage of CNPC was a major challenge that the government and NOCs faced during this stage. The financial problems facing the sector and the government made it more urgent to enhance commercial performance of the sector.

Table 6-2 The Profit of CNPC (1988-1993)

Year	Profit before tax	Tax	After-tax profit
	(RMB bn)	(RMB bn)	(RMB bn)
1988	3.9	4.64	-0.74
1989	1.52	5.39	-3.87
1990	0.20	5.79	-5.59
1991	1.08	6.36	-5.28
1992	-2.89	6.37	-9.26
1993	3.91	6.54	-2.63

6.1.5 Changes in national capacity

The government's regulatory capacity in terms of regulating its national economy was enhanced immensely as a result of the implementation of new laws and regulations, the promotion of better educated government officers, the accumulated experience of regulating market economy during the previous stage, as well as the newly established market style economic rules such as accounting standards, fiscal, investment, and pricing systems which together enabled the government to collect more information and to regulate the economy more effectively.

However, the regulatory capacity of the country had a few weaknesses, and the progress mentioned in the previous paragraph was offset by a few other factors. The first one is that the local governments gained significant power during the decentralisation of the fiscal regime in the previous stage. These reforms allowed local governments to build

up their institutional capacity. Although the quality of information enterprises provided was greatly enhanced due to the employment of the new accounting system, the central government still had difficulty gaining access to these information generated at the local level. It was said that "numbers make cadres, and cadres make up numbers".[398] This control of information enabled the local government to bargain with the central government in order to pursue their interests at the cost of the central government.[399] Although not a dominant factor, this played a role in the reforms of NOCs during this stage.[400]

Another weakness in the regulatory capacity was in terms of regulating the petroleum sector. The government had relied heavily on the NOCs to govern the sector and reforms of it lagged far behind other sectors due to its strategic role in the national economy. This together with the increasing independence of the sector increased the risks of the sector pursuing its own interest at the cost of the central government.[401]

Furthermore, the government was still unable to provide an adequate and well-functioning social welfare system to provide employment support, pension, and

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[398] Kynge, J. (2007). *China Shakes the World : the Rise of a Hungry Nation*. London: Phoenix.

[399] Larsson, T. (2006). Reform, Corruption, and Growth: Why Corruption is more Devastating in Russia than in China. *Communist and Post-Communist Studies 39*, 265-281. Lieberthal, K. (1995). *Governing China, from Revolution through Reform*. New York, London: W.W.Norton and Company, Inc. p.124

[400] Lieberthal, K. (1995). Lieberthal, K. (1995). *Governing China, from Revolution through Reform*. New York, London: W.W.Norton and Company, Inc. p.178. "Reformers during the 1980s worked hard to bring younger, better educated individual into office." p.204. During the reforms the SPC are losing power, and power was transferred to localities and ministries

[401] This is especially the case of the petroleum sector as will be seen in section 5.2.1: the government still chose to rely on NOCs for critical support and failed to build up an effective regulatory capacity.

health care. As a result, the NOCs continued to retain these responsibilities. For example, the petroleum sector had invested in a wide range of non-petroleum related business under a strategy of "diversifying investment", aimed at providing employment for children of their workers, which was considered to be a social responsibility of the NOCs.

The industrial capacity of the petroleum sector remained similar to the previous stage, with the sector containing strong productive capacity, but poor investment, financing, and marketing capacities due to its lack of autonomy in these areas. However, this situation started to change gradually as the government encouraged the sector to invest overseas as analysed in section 6.1.4.

The general market capacity was developed during this stage as more commodities were liberalised. It is however not the case for crude oil and oil products, which was still tightly controlled by the government, together with other sectors such as water, power, and food [402] due to concerns over social impacts.

6.1.6 The implications on the government and the petroleum sector

The changing nature of the economic ideology, new market style economic reforms, and the specific petroleum sector related factors analysed above presented new challenges

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[402] Minder, R., & Leahy, J. (2008, 10th January, 2008). Asia Battles with Surging Food Costs. *Financial Times*, p. 9.

and opportunities for the government to reform the NOCs. The government remained keen to enhance the commercial performance of the petroleum sector during this stage, and faced restrictions, old and new, in pursuing this goal.

On the one hand, the government wanted to conduct reform to enhance the commercial performance of the NOCs, in order to address their severe financial problems and to avoid the possible social chaos caused by laying off workforce. Meanwhile, further economic reforms and the significant enhancement in the government's regulatory capacity made it possible for the government to further separate itself from the commercial activities of the NOCs, and to provide the latter with greater autonomy.

On the other hand, the government was concerned about the possible negative effect of radical reforms for a few reasons. The government needed to have the NOCs to address the increasing security of supply risk, by assigning them with the tasks of delivering a stable and smooth supply of oil domestically at the government designated prices. The government also wanted the NOCs to retain social responsibilities such as providing employment, social welfare and other services which the government was not able to take over due to its weak regulatory capacity as analysed in section 6.1.5.

6.2 The reforms of the institutional arrangement of the petroleum sector

The institutional arrangement of the petroleum sector underwent major changes

reflecting the factors analysed in the previous section. The major elements of the reforms included, firstly, the changes in the industry structure of the sector by allowing CNPC and Sinopec to participate in the import/export business, secondly, the tightening of pricing and distribution system, and thirdly, the further formalisation of fiscal and financial systems.

6.2.1 The reforms of the regulatory framework

There were a few minor changes in the regulatory framework of the sector, mainly as part of the general restructuring of the government organisation under Vice Premier Zhu, who intended to reduce the size of government in order to increase its regulatory efficiency. For example, as part of Zhu's government reform, the State Economy and Trade Commission ("SETC") was re-established as a general economic institution. As a result, the SPC and SETC became two powerful economic administration bodies of the central government that were brought on par with each other.[403] Furthermore, specific line ministries were abolished, including the Ministry of Energy in 1993. After that, most petroleum related regulatory functions of the ministry were either moved to the SPC or SETC or to the three NOCs of CNPC, CNOOC and Sinopec.[404] Despite the

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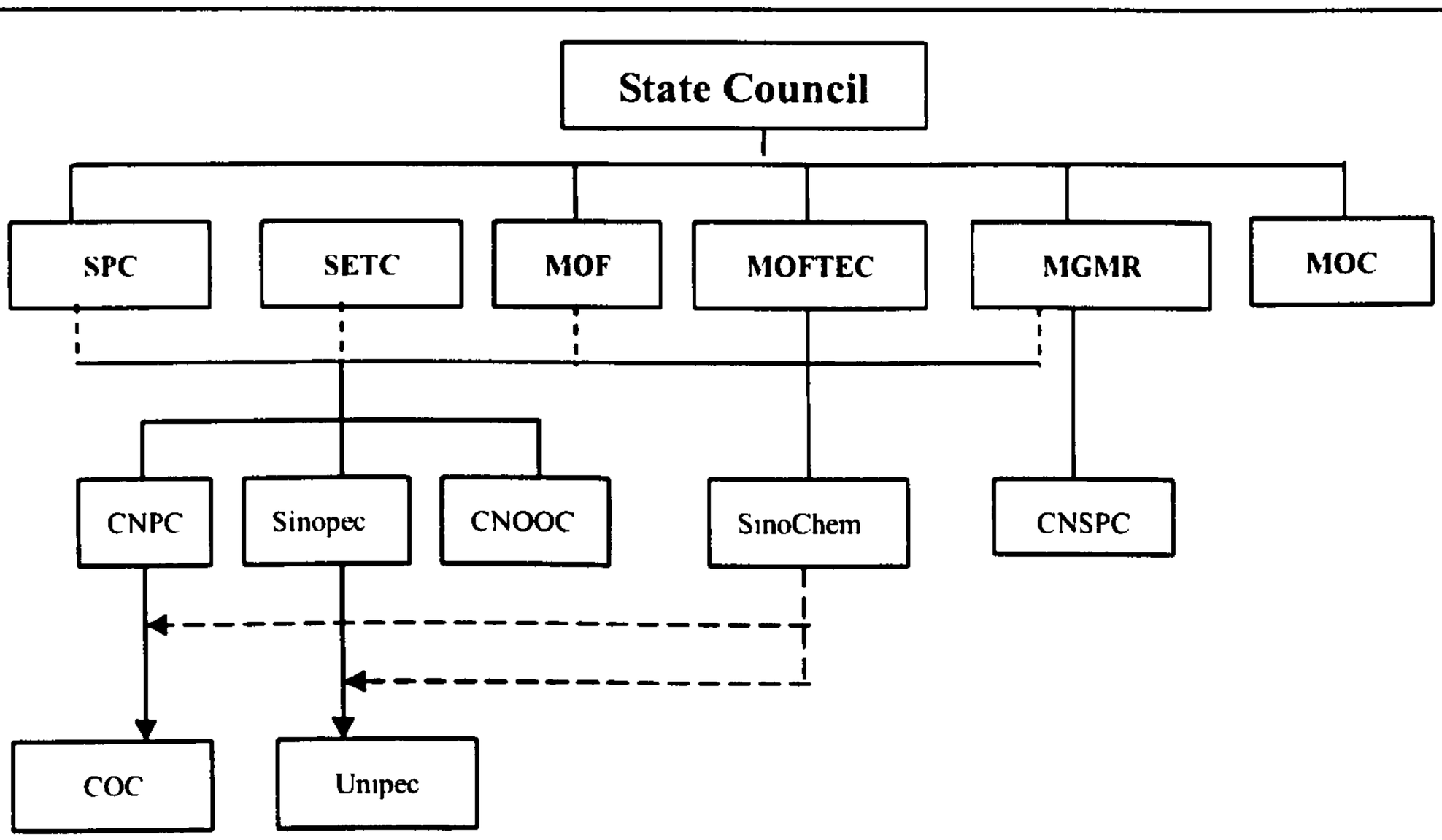
[403] Fesharaki, F., & Wu, K. (1998). Revitalizing China's Petroleum Industry through Reorganisation: Will it Work? *OGL Special*(Special Issue), 33-45. p.34. The commission was originated from the State Economic Commission (SEC) which was abolished by Li Peng in the 1988 government reform.

[404] Gao, S., Liang, S., Geng, Z., Yang, Q., & Guo, Y. (2003). *The Review and Evaluation of the Energy Strategy and Policy (In Chinese)*. Beijing Energy Research Institute of National Development and Reform Commission.p.48. PetroChina. (2005). *The Government Institutional Reform of China since 1949 (In Chinese)*. Beijing: PetroChina Company Ltd internal report.p.8. Yan, X.-C. (1998). *The Grand Restructure of the Chinese Petroleum Industry (In Chinese)*. Beijing The Petroleum Industrial Publishing House. p.15. Lieberthal, K., & Oksenberg, M. (1988). *Policy Making in China: Leaders, Structures and Processes* Princeton, N.J.: Princeton University Press. p.254. In 1980, State Energy Commission was established to provide "coherence and coordination to energy policy". It was abolished later in 1983.

above changes, the regulatory framework remained more or less the similar to the previous stage, as the Ministry of Energy remained an ineffective entity since its establishment. The new regulatory framework and industrial structure is shown in Figure 6.2.

Figure 6-2 The new regulatory framework and industrial structure



SPC: State Planning Commission (1993-2003)

SETC: State Economic and Trade Commission

MOF: Ministry of Finance

MOFTEC: Ministry of Foreign Trade and Economic Cooperation

MGMR: Ministry of Geology and Mineral Resources

MOC: Ministry of Commerce (2003-present)

CNPC: China National Petroleum Corporation (upstream)

Sinopec: China Petrochemical Corporation (Downstream)

CNOOC: China National Offshore Oil Corporation (offshore upstream)

CNSPC: China National Star Petroleum Corporation

Sinochem: China National Chemical Import and Export Corporation

COC: China Oil Corporation

Unipec: China International United Petroleum and Chemical Company

6.2.2 The reforms of the industrial structure

The overall industrial structure remained similar to the previous stage, with some marginal changes, as a result of lobbying from different interest groups, especially NOCs.

6.2.2.1 The establishment of the CNSPC

In 1996, a new NOC called China New Star Petroleum Corporation ("CNSPC") was established by transforming the offshore Petroleum Geological Bureau under the MGMR, which was established in 1955.[405] This was a response of the central government to the strong lobbying from the Ministry, which felt it was in a much weaker position and threatened by the other NOCs.[406] Despite the strong objection of CNPC and CNOOC, the new company was approved by the State Council as a fully state owned enterprise to report to both State Council and MGMR.[407] The company was assigned a much wider range of rights than its peers and was able to conduct both upstream and downstream, operations in the domestic sector, and also participate in import/export businesses.[408] The establishment of the company could in theory intensify competition among NOCs. However, the impact was marginal as the scale of

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[405] Sinopec. (2005). Information on Sinopec (In Chinese), Retrieved 6th April, 2008, from News.sinopecnews.com.cn/shnews/2005-03/29/content_231595.htm

[406] Gao, S., Liang, S., Geng, Z., Yang, Q., & Guo, Y. (2003). *The Review and Evaluation of the Energy Strategy and Policy (In Chinese)*. Beijing Energy Research Institute of National Development and Reform Commission. p.13

[407] Ibid.

[408] The business activities of the company includes exploration, development, production of petroleum and natural gas domestically and overseas, domestic marketing of petroleum and natural gas; cooperation with foreign companies in given regions established by government, exploration and technology services domestically and overseas and the import and export of trade and technology services.

the new company was small. In 1997, the CNSPC had a production of only 0.6 mn tonnes of crude and 0.8 bn cubic meters of natural gas, which is much smaller than the other NOCs.[409]

6.2.2.2 The establishment of two new foreign trade companies

Pursuant to strong lobbying by CNPC and Sinopec, the government allowed them to become involved in the lucrative import and export business during this stage, which increased the competition within the sector to certain extent. The move also helped to enhance the exposure of these two NOCs to the international market and build up their marketing capacity.

The two NOCs had long been complaining that they should have similar rights as CNOOC and CNSPC in conducting import and export business and have access to the international market. They pointed out that the lack of access to the market and isolation from market forces prevented them from increasing their competitiveness. Meanwhile, they argued that the monopoly of Sinochem over import and export provided the company with monopoly profits, and had a negative impact on the country's commercial interest.[410]

To reconcile the opposing positions of CNPC and Sinopec on one hand, and Sinochem

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[409] Yan, X.-C. (1998). *The Grand Restructure of the Chinese Petroleum Industry (In Chinese)*. Beijing The Petroleum Industrial Publishing House. p.23

[410] Ibid.

on the other, the government implemented a proposal which required CNPC and Sinopec to set up their trading arms jointly with Sinochem. The joint venture of CNPC and Sinochem is called China Oil Corporation ("COC"). The joint venture of Sinopec and SinoChem was called China International United Petroleum and Chemical Company ("Unipec"). By the end of the stage, there were five entities involved in import and export business of petroleum: CNOOC, Sinochem, COC, Unipec and CNSPC. A quota system was implemented by the government to keep the balance of the domestic economy. All players had to acquire certain quota from the government for importing and exporting of crude oil and oil products.

6.2.2.3 Onshore foreign cooperation

During this stage, foreign oil companies were permitted to participate in onshore petroleum activities in China.[411] The attempt never went too far due to the strong objections from CNPC who had guarded the domestic resources for decades. Therefore the blocks made available for bidding to foreign companies were remote and less promising. Additionally, all foreign participation had to jointly conducted with CNPC, the so-called "government participation". A regulation titled "Regulation of People's Republic of China on Exploitation of Onshore Petroleum Resources in Cooperation with Foreign Enterprises" was issued in order to establish the dominant role of CNPC in cooperating with foreign players.[412]

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[411] CNPC. (1997). *CNPC Yearbook 1996 (In Chinese)* Beijing: The Petroleum Industry Publishing House

[412] MOLAR. (2005). *The Selected Laws and Regulations of the People's Republic of China on Mineral Exploration and Development (In Chinese))*. Beijing: Ministry of Land and Resources p.41

6.2.2.4 The responsibilities of the government and NOCs

During this stage, the responsibilities of the government and NOCs remained similar to that of the previous stages. Government still relied heavily on NOCs for regulatory support, as illustrated in table 6.3.

Table 6-3 The responsibilities and rights of the government and NOCs (1993-1998)[413]

The responsibilities of the government	The responsibilities of the NOCs
1. To draft and implement the overall petroleum policy and reform plan in consultation with the NOCs.	1. To propose the development strategy for the petroleum sector, and support the formulation and implementation of petroleum policy and reform plan.
2. To formulate the investment plan and to approve certain projects (such as oil development projects with production capacity exceeding 0.5 mn ton/year for, and natural gas development projects with production capacity exceeding 0.2 bcm, long term pipeline projects with investment exceeding RMB 50 mn.	2. To pre-screen the petroleum exploration and development projects before submitting for SPC approval. 3. To forecast the domestic crude oil and oil products supply and demand and to devise the draft plan for crude oil and oil products production, transportation and marketing.
3. To formulate the annual, middle and long term production, distribution, import and export plans for crude oil and oil products in consultation with the NOCs. To establish and assign the production tasks to the NOCs. To issue licence and quota for the NOCs conducting petroleum related activities. To set up prices for crude oil and oil products[414]	4. To organise production, transportation, distribution, import and export of crude oil and oil product according to state plan.

[413] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.80. SPC. (1995). *1995 Energy Report of China (in Chinese)*. Beijing Department of Communcations and Energy, State Planning Commission of P.R. China. p.37-44. SPC, & SETC. (1994). 'The Notice on Reforming of the Distribution System of Crude Oil and Oil Products (In Chinese). Retrieved 26th Mar, 2007, from http://www.yfzs.gov.cn/gb/info/LawData/gjf2001q/gwyfg/2003-06/30/1549040781.html
CNPC. (1997). *CNPC Yearbook 1996 (In Chinese)* Beijing: The Petroleum Industry Publishing House. p.16 'The notice of SPC on registry regimes of oil and gas exploration'. p.18, 'The method of regulating market of oil products

[414] Gao, S., Liang, S., Geng, Z., Yang, Q., & Guo, Y. (2003). *The Review and Evaluation of the Energy Strategy and Policy (In Chinese)*. Beijing Energy Research Institute of National Development and Reform Commission. p.10-14. In 1996, the government revised the "Law of Mineral Resources" clarified the ownership of mineral resources and terminated free use of resources.

6.2.3 The reforms of the industrial structure: the internal structure of the NOCs (the example of CNPC)

During this stage, NOCs were facing severe commercial pressure due to the government reforms, as well as their financial crisis.[415] In response, they also formulated new strategies and conducted internal reforms to address these challenges. Take CNPC for example, the company came up with a new strategy of enhancing efficiency and profitability by emphasising its core business of oil and gas in 1995.[416] Guided by the new strategy, the company conducted internal reforms to enhance the control of the headquarters over its BUs, and tried to eliminate the negative impacts of the decentralised business structure employed by CNPC in the previous stages, as introduced in chapter 5.

6.2.3.1 The weaknesses in the previous internal structure

In the beginning of the stage, the internal structure of the company remained largely similar to the previous stage. Most BUs still employed the "self contained" model, and undertook wide range of social functions in addition to their commercial responsibility.[417] This together with the decentralised and complicated organisational structure of CNPC (figure 6.3), made it very difficult for the headquarters to exert an

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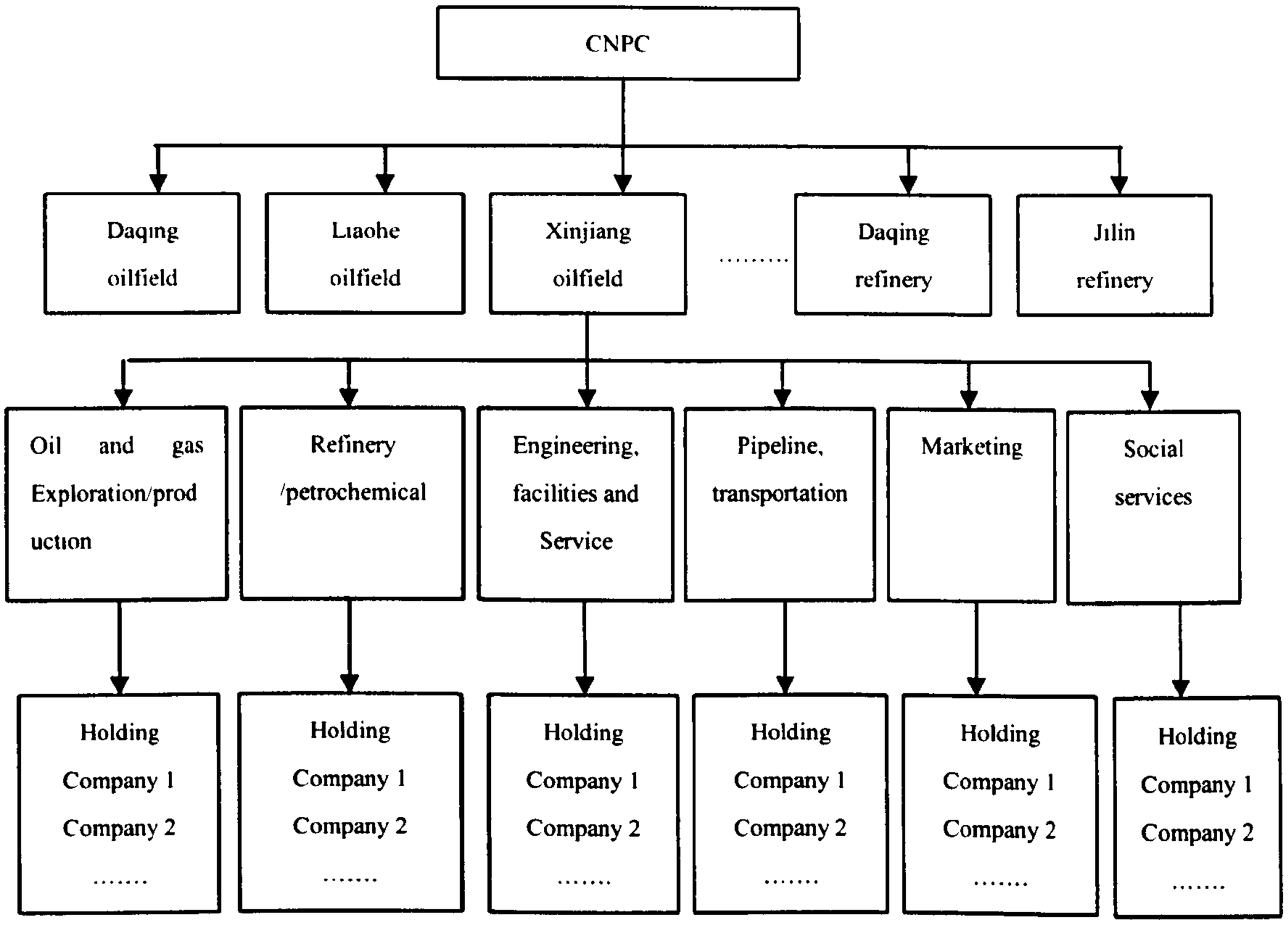
[415] CNPC. (1997). *CNPC Yearbook 1996 (In Chinese)* Beijing: The Petroleum Industry Publishing House. p.78. The company formulated the develop strategy of "fasten development and centred on economic efficiency.". Jia, Y., Xiao, Y., & Guo, T. (2005). *Budget and Cash Management (In Chinese)*. Beijing: Commercial Publishing House. p.229

[416] CNPC. (1997). *CNPC Yearbook 1996 (In Chinese)* Beijing: The Petroleum Industry Publishing House. p.80

[417] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.173

effective control over their BUs, which resulted in imprudent investment and cost control at the Bus' level.

Figure 6-3 The organisational structure of CNPC in 1998



In 1998, the average cost of oil was as high as 11.6 US$/bbl, with production costs reaching 9.6 US US$/bbl. For refineries, 11 of them incurred a loss, among them 5 were especially severe, with a total loss of RBM 5.5 bn per year.[418] To address these problems, CNPC tried three types of internal reforms: a revised "production and operation responsibility system", "asset operation responsibility system" and "Modern

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[418] Ibid. p.172

Enterprise System" trial.[419] Further, other internal reform measures were undertaken to enhance the ability of the headquarters to control their BUs.

6.2.3.2 The internal reforms on the organisational structure and internal governance

In 1994 and 1995, the headquarters of CNPC revised the internal responsibilities contracts system by applying new systems which better accommodated the need of the headquarters to control its BUs. The "production and operation responsibility system" and "asset operation responsibility system" were adopted, which not only emphasised the profitability as major tasks of BUs, but also enhanced material incentive and autonomy of BUs.[420] Two new performance indicators were introduced by the two new systems, including the State Asset Maintenance Ratio and Reserve to Production Ratio to measure the long term commercial performance of BUs.[421] The package of performance-linked reward and sanction mechanisms was also enhanced by the two

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[419] Bai, X., & Bennington, L. (2002). *Steering and Rowing in Chinese SOEs: the Modern Enterprise System in China* Paper presented at the 15th Annual Conference of the Association for Chinese Economics Studies Australia. p.5

[420] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.30

[421] Ibid. p.34-35

The State Assets Maintenance Ratio = (State owned equity in the beginning of accounting year + after tax profit of accounting year)/state equity in the beginning of accounting year *100%

A=(E+I)/E*100%

A—The State Assets Maintenance Ratio

E— State owned equity in the beginning the year (the government share if shareholder equity in the balance statement)

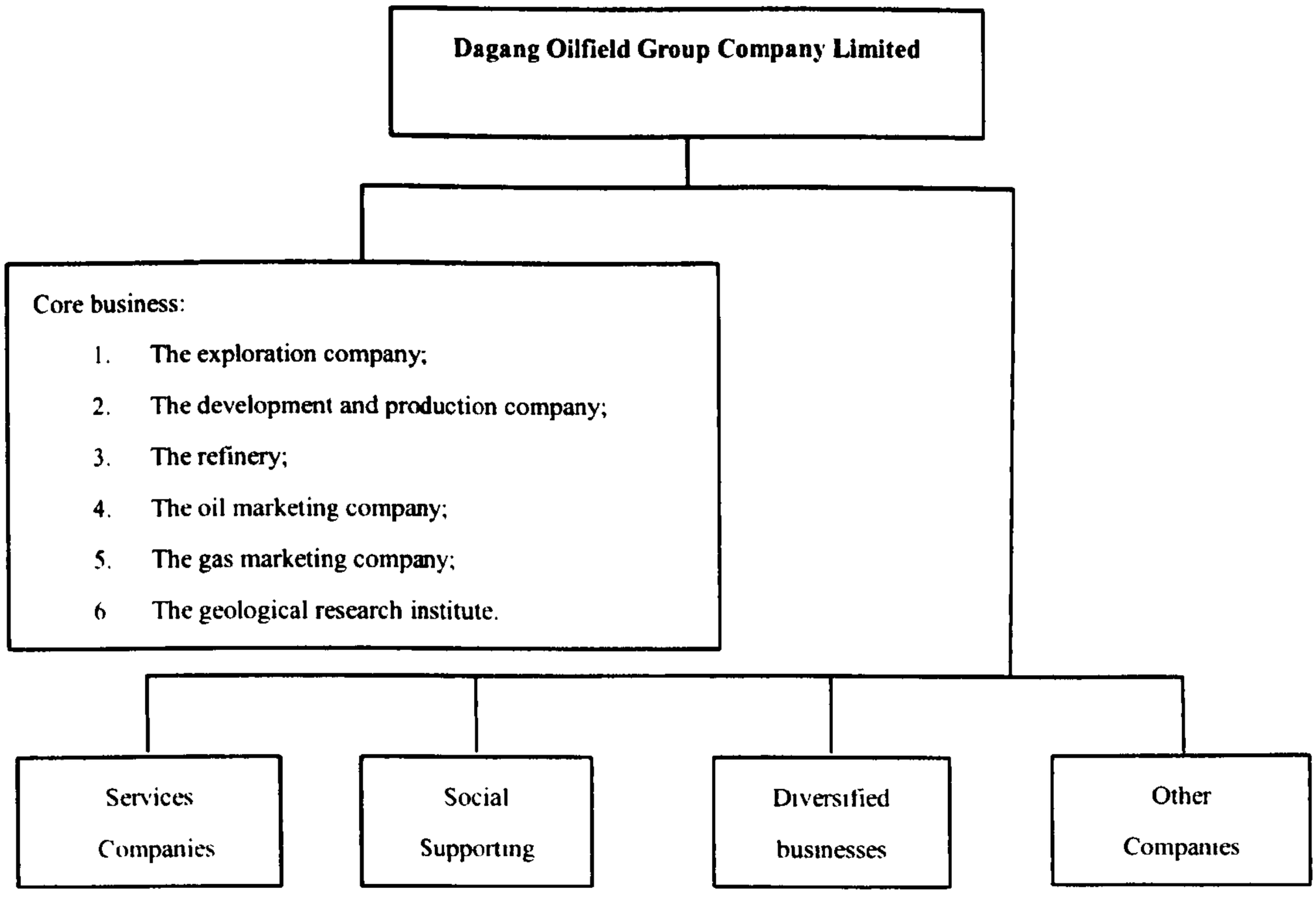
I— After tax profit of accounting year

The reserve to production ratio = newly increased reserve of the year/ oil and gas production of the year*100%

new systems.[422]

In addition to this, CNPC also initiated trial of the Modern Enterprise System and the "oil company model". BUs under this trial were required to separate their core commercial activities and non-core activities. They were required to establish a corporate governance system by establishing Boards of Directors and supervisory Committees in order to enhance the internal check and balance mechanism. (Figure 6.4 and 6.5 demonstrate the example of the Dagang oilfield after adopting the new system).[423]

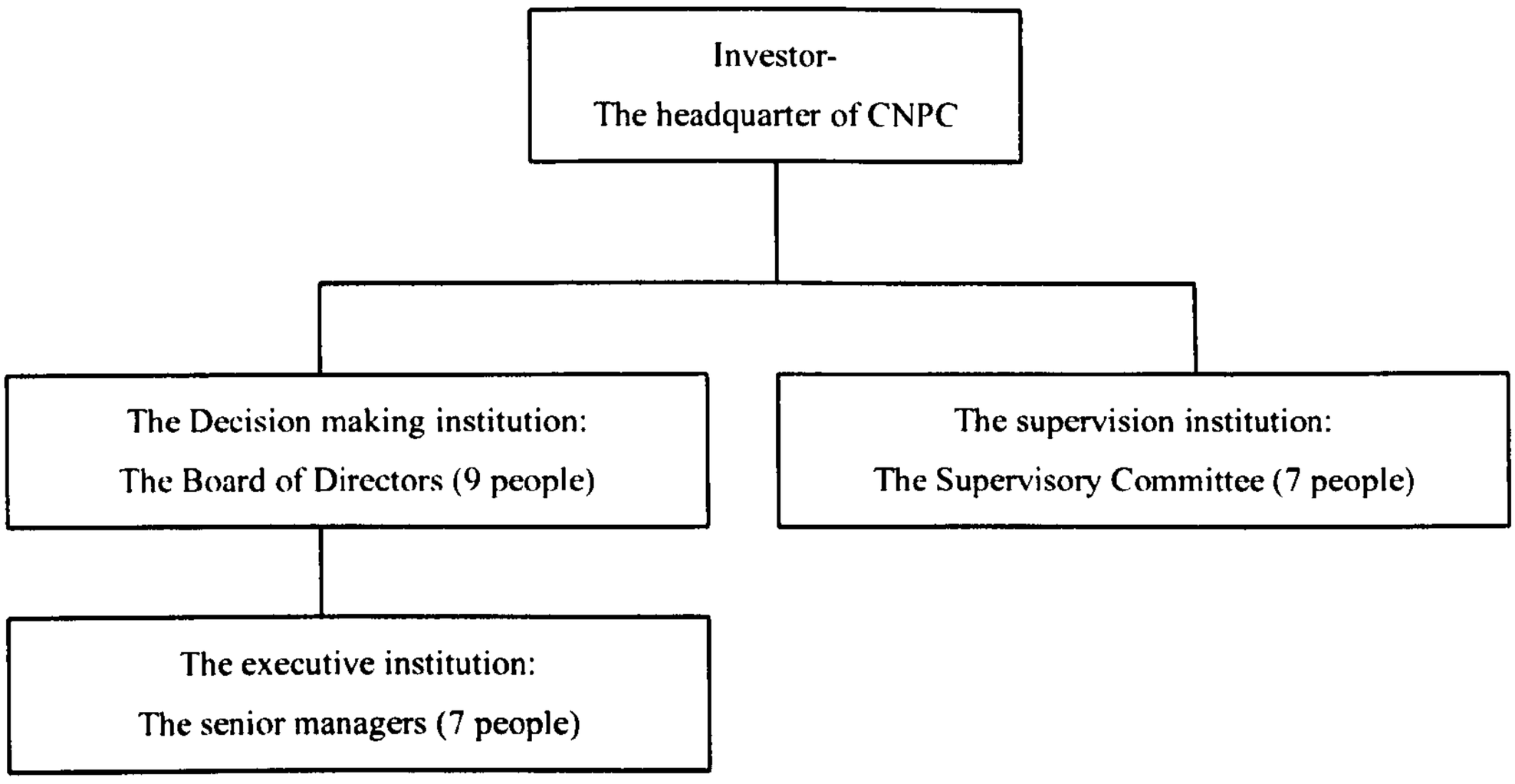
Figure 6-4 The new organisational structure of the Dagang oilfield



[422] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.34

[423] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.79. Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.45, 48

Figure 6-5 The corporate governance structure of Dagang oilfield



6.2.3.3 The reform of other internal supporting mechanisms

CNPC also established a new financial management system comprising the modern budgeting system, the centralised cash management system, and a new accounting system, to equip its headquarter in controlling its BUs.

A western style budgeting system was adopted by the CNPC as a tool for the headquarters to exert better control over cost management, investment management and cash management of its BUs before, during and after each budgeting year.[424] The headquarters started to build up institutional capacity to enforce the budgeting system by establishing Budgeting Committee at the headquarters and the BUs level. Members

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[424] Jia, Y., Xiao, Y., & Guo, T. (2005). *Budget and Cash Management (In Chinese)*. Beijing: Commercial Publishing House. p.38-39. It was common practice before the reform that the planning department which was in charge of investment, and the finance department which was in charge of financing and financial management operated in a separate way, with very few cooperation between them. The modern budgeting system was adopted to consolidate these two functions in order to improve the efficiency of the company. The system was firstly trialed in Zhongyuan oilfield in 1994. Chen, M. (2005). *Budgeting Practice in China: a Case Study*. University of Dundee, Dundee.

of these committees were normally senior and middle managers at each level.[425]

CNPC also applied a new centralised cash management system to better control operations of BUs through the control of cash flow.[426] All BUs were required to establish an internal cash settlement centre and rationalise their bank accounts. Under the policy, more than 4800 bank accounts were closed in 1995. Through the new system, the headquarters was able to curb misuse of capital by BUs, to reduce daily cash positions, and to enhance control over investment and operational activities of BUs.[427]

CNPC also launched a new accounting system under the guidance of the new accounting standards issued by MOF in 1993.[428] Accounting practice on sales revenue, expenditure, cost and depreciation was further clarified and formalised. Stricter discipline was applied to cost and expenditure management by the new accounting system. A new financial reporting system was created to unify and formalise format of accounting statements and the procedure of submitting. Additionally, computer and network based financial management information systems were used in order to

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[425] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.30. Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.86. "industrial added value = total industrial output-intermediate input (direct material input, production cost, management cost, sales cost and financial cost) +income tax"

[426] Interview of a former finance officer of the Ministry of Petroleum Industry in Beijing in 2006

[427] Jia, Y., Xiao, Y., & Guo, T. (2005). *Budget and Cash Management (In Chinese)*. Beijing: Commercial Publishing House. p.234

[428] Zhou, M., Lu, L., & Chai, S. (2005). *Accounting and Information System (In Chinese)*. Beijing: Commercial Publishing House. "Regulations about the implementation of new financial and accounting standards of the Ministry of Finance"

enhance the quality of financial data and better support decision-making since 1994.[429]

These new systems emphasised profitability and efficiency as being the major tasks of BUs, and increased the controlling capacity of the headquarters over BUs. However the system still had certain weaknesses. The profitability indicator was still obscured by the regulated pricing system, as well as by the social functions taken by BUs. As a result, production was still an important indicator to measure the performance of BUs.[430]

6.2.4 The reforms of the pricing and distribution systems

The pricing and distribution systems underwent major reforms during this stage, through which the government sought to reaffirm the government's control over the petroleum pricing and distribution systems, whilst at the same time try to increase the price levels and to steadily reduce the gap between domestic and international prices .[431] A new package of reforms was implemented by the government in 1994, and thereafter adjusted in later years.

6.2.4.1 Drivers for the reforms of the pricing and distribution systems

The major drivers for the reforms of the pricing and distribution systems were the

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[429] Ibid. p.32-44

[430] Jia, Y., Xiao, Y., & Guo, T. (2005). *Budget and Cash Management (In Chinese)*. Beijing: Commercial Publishing House. p.40

[431] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.16. The reform plan was issued through "The Notice on the opinions of reforming the crude oil and oil products circulation mechanism". SPC, & SETC. (1994). The Notice on Reforming of the Distribution System of Crude Oil and Oil Products' (In Chinese). Retrieved 26th Mar, 2007, from http://www.yfzs.gov.cn/gb/info/LawData/gjf2001q/gwyfg/2003-06/30/1549040781.html

market disorder, represented by frequent imbalance between supply and demand, rampant rent-seeking and speculative behaviours, as well as the existence of a black market.

For example, at a certain period in the previous stage, the domestic gasoline prices doubled and exceeded the international prices shortly after a reform measure to remove the price caps on a small share of oil products.[432] Speculative behaviour was rampant and it was said that more than 1.3 million people were involved in the petroleum trading. Rent-seeking behaviour soon followed.[433] The country's increasing exposure to the international market and the lack of national capacity to deal with the market risks were the main reasons for these problems. However the government tended to blame the liberalisation reforms conducted in the previous stage for the problems and started to reverse these reforms.

6.2.4.2 The reforms of pricing system (crude oil)

The reforms of the pricing system for crude oil contained two components. On the one hand, the government regained control by re-established the role of SPC as the sole body in charge of pricing policies, and abolished the liberalisation measures introduced on a trial basis during the previous stage. Thus the dual and multi track pricing systems that prevailed in the previous stage were removed.

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[432] Qiu, B. (2000). *Chinese Petroleum Sector challenging WTO (In Chinese)*. Beijing: The Petroleum Industry Publishing House.p.18

[433] Ibid

On the other hand, the government increased the level of the regulated prices for crude oil to gradually address and alleviate the financial burden of the government and the NOCs. In 1994, the government raised the price on the regulated low prices to reach an average of RMB 700 yuan/ton, to bring it on par with the regulated export prices, thereby effectively merged them. It also raised the price on the regulated high prices to reach an average of RMB 1250 yuan/ton.[434] In 1996, the government increased the level of the regulated low prices of crude oil by an average RMB 110 and 120 yuan/ton, and reduced the price level of the regulated high prices by an average of RMB 50 yuan/ton, bringing the two on par, and almost merged them.[435]

Table 6-4 Crude oil prices after 1994 reform (before the 1996 reform)[436]

	Average prices	% of production	Scope of application
The regulated low prices	700 Yuan/ ton (including VAT)	72%	Crude oil included in the state commodity plan and produced by certain large scale oilfields
The regulated high prices	1250 Yuan/ton (including VAT)	28%	Crude oil not included in the state commodity plan by SPC, produced by middle and small scale oil fields with high cost, and heavy financial burdens

6.2.4.3 The reforms of the pricing system (oil products)

The government also regained control to establish prices of oil products, and abolished the liberalisation measures enforced in the pricing system during the previous stage. After this reform, the SPC was responsible for setting wholesale and retail prices in 35

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[434] SPC, & SETC. (1994). The Notice on Reforming of the Distribution System of Crude Oil and Oil Products (In Chinese). Retrieved 26th Mar, 2007, from http://www.yfzs.gov.cn/gb/info/LawData/gjf2001q/gwyfg/2003-06/30/1549040781.html. Crude oil from different oilfields was priced differently to reflect different quality of the crude oil they produce and the different financial situation they are having

[435] The government still kept the practice of pricing crude oil produced in different oilfields differently.

[436] Interview of a senior finance officer of PetroChina in Beijing in 2006. Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. P.15-16

large cities in China. The retail prices for the rest of country were set by price bureaus at provincial level under the guidance of the SPC.[437] The price level for oil products remained stable during this stage except for a slight increase in 1996 by RMB 50-100 yuan/ton.

6.2.4.4 The reform of the distribution system

The government also significantly tightened control over the petroleum distribution system in the 1994. SPC was the major government body in charge of the centrally controlled distribution system. However, owing to its weak capacity, SPC in turn largely relied on the planning capacity of CNPC and Sinopec.[438] NOCs were banned from selling crude oil and oil products outside the government controlled distribution system. All domestic onshore crude oil produced by CNPC, foreign companies and domestic producers, as well as all oil products produced by Sinopec and CNPC, domestic and foreign invested (applicable to the share that was required to be sold domestically) refineries, were required to be sold through the government controlled distribution system.

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[437] SPC, & SETC. (1994). The Notice on Reforming of the Distribution System of Crude Oil and Oil Products (In Chinese). Retrieved 26th Mar, 2007, from http://www.yfzs.gov.cn/gb/info/LawData/gjf2001q/gwyfg/2003-06/30/1549040781.html.Wen, Q., Xiang, Z.,& Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commerc+ial Publishing House. p.20

[438] Ibid. SPC was required to formulate annual, middle and long term plan of the supply and demand of crude oil and oil products, based on macro-economy development plan, industrial policies, import and export policy, energy policy (including energy conservation policy), and the production capacity of existing oil fields. CNPC was responsible for the detailed forecast of domestic demand and supply for crude oil (including domestic production and import). Sinopec was responsible for the detailed forecast of demand and supply of oil products (including domestic production and import).

The government also tightened the licensing system for enterprises participating in the marketing of crude oil and oil products. Based on a qualification review, the government removed the licences of those who failed to meet its standards. The government also banned companies with the Party, political and military background from participating in distribution activities. Meanwhile, the government required the NOCs, mainly CNPC and Sinopec, to optimise the value chain of the distribution system by cutting redundant steps from the chain.[439] Many sales companies of Sinopec were transferred into administrative and coordinating entities, and lost their right to conduct oil and gas related transactions. Direct sale of oil products to major consumers such as railway, transportation, air transportation, army, CNPC and foreign trade sectors was also introduced.

These reform measures contained the positive elements of removing the multi-band price systems and made the pricing system more straightforward and easier to regulate. However, the reforms during this stage reduced the extent of liberalisation and prevented the formation of market capacity within the sector and marketing capacity within the NOCs.

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[439] SPC, & SETC. (1994). The Notice on Reforming of the Distribution System of Crude Oil and Oil Products (In Chinese). Retrieved 26th Mar, 2007, from http://www.yfzs.gov.cn/gb/info/LawData/gjf2001q/gwyfg/2003-06/30/1549040781.html. Only one retail transaction and one wholesale transaction were allowed within each value chain to bring crude oil or oil products from the producers to the consumers in order to cut unnecessary resale of oil products among players, which caused delay, increased cost and complicated the system.

6.2.5 The reform of the financial regime

The financial regime underwent reforms similar to the general financial reforms discussed in section 6.1. The system was further formalised, with the share of capital provided by the government being further reduced, and the share of commercial loans increased (as shown in figure 6.5).

Table 6-5 The structure of capital investment (CNPC) [440]

	The Exploration investment (RMB bn)	Among it the government investment (RMB bn)	%	Bank loan and others (%)
1981-1985	46.4	11.4	24.6%	75.4%
1986-1990	107.8	10.8	10.0%	90.0%
1991-1995	229.9	6.0	2.60%	97.4%

Furthermore, a new dividend policy was introduced by the government in order to clarify the role of the government as revenue-collector and shareholder.[441] According to the policy, the government, similar to other shareholders, was eligible for a certain share of net profit based on its share in enterprises.[442] The policy was only possible after the new accounting standards enacted during this stage. Under the new standards, a "registered capital system" was established, which required a clear accounting of capital provided by different types of investors, such as government investor, legal person

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[440] CNPC. (2000). *CNPC Yearbook 1999 (In Chinese)*. Beijing: The Petroleum Industry Publishing House. p.509. Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.71

[441] CNPC. (2006). *CNPC Internal Research Report on the State Dividend policy* Beijing: CNPC. p.2. According to the government document "The Method on the Collection of profit on State Assets", a profit sharing system for SOEs was established. SOEs were required in theory to pay dividend, profits or after tax profit to the government according to the percentage of state share. The method was suspended during the 1993 and 1998 due to "immature environment ". The method was activated in 2007, when a pilot scheme was by the government.

[442] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.181

investor, individual investor and foreign investor. By doing so, investors were able to benefit from dividends based on their share of registered capital in enterprises.[443] During this stage, the government suspended the policy temporarily to support SOEs, as most of them still took heavy social burdens.

Despite the positive elements discussed above, the role of the new financial system established during this stage was largely restricted by the regulated pricing system, which muddled the financial relationship between the government and NOCs. The government still provided the NOCs with significant amount of subsidy to compensate their losses due to the regulated pricing system. For example, an RMB 5 bn was transferred to CNPC in early 1990s.[444]

6.2.6 The reform of the fiscal regime

6.2.6.1 The new fiscal regime

The taxation system applied to the onshore petroleum operation was also changed as part of the general fiscal reform in the country analysed in section 6.1. The core changes of the new system compared to the previous system are shown in the table 6.6. The taxation system applying to the onshore domestic operations after reform is shown in table 6.7. These changes had two major implications. First of all, the VAT had largely

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[443] Zhou, M., Lu, L., & Chai, S. (2005). *Accounting and Information System (In Chinese)*. Beijing: Commercial Publishing House. p.26-32

[444] Lin, K.-C. (2003). Divergent Responses to Oil Price Shocks: Explaining Continuity and Radical Change in Industrial Governance of the Chinese Oil and Petrochemical sector. *Unpublished draft acquired from the author*. p.41

substituted the Products Tax as the major turnover tax applicable to the petroleum sector.[445] The rules of the VAT were the same all over the country and in all sectors. This to a certain extent improved the transparency of petroleum taxation and made it easier to be compared to other sectors. Secondly, the share of specific resource taxation was increased by the introduction of new taxes such as the Mineral Resource Compensation Fee since 1994.[446]

The fiscal regimes applying to the rest of the petroleum operations, such as on-shore cooperation (between CNPC and foreign partners), offshore cooperation (between CNOOC and foreign partners) and offshore domestic operation (CNOOC) remained unchanged.[447]

Table 6-6 The major changes in the taxation system for onshore petroleum operations [448]

The abolished tax	The Adjustment Tax, The Products Tax, the Special Tax for Fuel Combustion, the Keypoint Energy and Transport Construction Fund (KETC), and the Budget Adjustment Fund (BAF);
The revised tax	The VAT had substituted the Products Tax; The rate for the Resource Tax had been increased and the scope been expanded.
The newly added tax	The Mineral Resource Compensation Fee and the Consumption Tax;

[445] MOF. (2005). *Briefing of VAT under China's Tax System* Paper presented at the VAT conference Italy. The Chinese VAT is a turnover tax levying on value added during sales of goods or services. The tax is not included in prices of services or goods.

[446] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.184

[447] For these operations, the major fiscal system applied was Production Sharing Contract

[448] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.183. The Taxation Principles Division of the Ministry of Finance, China. (1998). *Tax System of China (In Chinese)*. Beijing: Enterprise Management Publishing House. Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press. p.131

Table 6-7 The Fiscal regime for onshore petroleum operation [449]

Taxes/ Fees	Tax rate	Tax base	Note
Taxations			
1. VAT	17% (crude oil), 13% (natural gas)	Sales revenue or expenditure.[450]	Shared tax (75%: the central government, 25%: the local governments)
2. The Consumption Tax	277.6 RMB yuan/ton (gasoline) 117.6 RMB yuan/ton (Diesel)	Amount of production sold	30 RMB yuan/ton rebate since 1994
3. The Business Tax	3%	Sales revenue	For natural gas purify & Pipeline, transportation fee
4. The Urban Maintenance and Construction Tax	Urban area 7%、town area5%、others 1%	1+2+3	Used for maintenance of urban, town and other public infrastructures and facilities
5. The Resource Tax	Depends on different oil and gas field	Quantity sold or used (for self-use)	It is a local tax. It was increased from RMB 4-6yuan/ton to 8-30 yuan/ton after the 1994 reform
6. The Housing tax	1.2% for remain value, or 12% for rent income	Remain value or rent income of houses	
7. The Urban Land Using Tax	0.3-10Yuan/ square meter	Acreage of land occupied	
8.The Enterprise Income Tax	33%	Taxable income	
9.The Vehicle using tax	RMB 16-320yuan/year (motor vehicle), RMB 12-32 yuan/ year (Non-moter vehicle)	Carrying capacity	
10.The Stamp tax	Varies	Varies	
11. The Fixed Assets Investment Direction Adjusting Tax	0-30%	Fixed assets invest	

[449] Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press. p.131. Brean, D. J. S. (1998). Fiscal Reform in Modern China. In D. J. S. Brean (Ed.), *Taxation in Modern China* (pp. 1-30). New York: Routledge. p.16. Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.184

[450] Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press. p.43. The calculation of VAT is different from that of normal taxation. There are two parts of VAT, at the sales side and at the expenditure side. VAT at sales said = sales revenue (no VAT included) × VAT rate (13% or 17%) VAT at expenditure said = expenditure (no VAT included) × VAT rate (13% or 17%). The final VAT an enterprise need to pay = VAT at sales said - VAT at expenditure said.

Taxes/ Fees	Tax rate	Tax base	Note
12. The Cultivated Land Occupation Tax	Different rate applied on different region	Square meter of occupied land	
13. The Customs Duty	Varies	Varies	
Main administrative charge and fees			
14. Additional Education fee	3%	=1+2+3	
15. Mineral Resource Compensation fee	1%	Revenue	It is shared by the central and local governments (60-50% versus 40-50%)
16. Mining Exploration Right Fee	RMB 100-500 Yuan per square km	Acreage	
17. Mining Production Right Fee	RMB 1000 Yuan per square km	Acreage	
18. River Maintenance Fee	Depends on different region	Revenue	

6.2.6.2 The privileged taxation policies

After the reforms, the taxation structure of the petroleum sector was similar to other sectors. The privileged treatments provided to the petroleum sector earlier were reduced or had lapsed, and new such treatments were now more difficult to acquire. The remaining privileges included the income tax abatement policy, which was launched since 1994 to release losses of NOCs resulting from low crude oil price policy.[451] The government returned a certain share of income tax to the NOCs to compensate them for their losses. The income taxation abatement was treated as state capital injection.[452] CNPC was also granted a waiver from the Keypoint Energy and Transport Construction Fund, and Budget Adjustment Fund from 1994-1996. This practice was similar to other

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[451] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.182

[452] Interview of a senior finance officer of PetroChina in Beijing in 2006

SOEs in deficit during this stage and was also treated as state capital injection.

6.2.6.3 Conclusion

The 1994 reforms further formalised the fiscal relationship between the government and the NOCs increased its transparency of them. The more unified fiscal regime across the country, and the reduction of special treatments made it easier for stakeholders to compare the tax burden of the petroleum sector to other sectors. Despite these positive aspects of the reforms, the impact of the new taxation system was still largely restricted by the government regulated pricing system, due to the role of price as a major factor in calculating taxes. The government regulated pricing system also played a role as an indirect tax, when the government kept the domestic prices lower than the international prices, which further obscured the calculation of the tax burden of the petroleum sector. According to a rough calculation, from 1980 to 1990, this implicit levy amounted to over RMB 400 bn, and between 1991 and 2001, the average annual implicit levy remained about RMB 30 bn.[453]

6.2.7 The P-A relationship formed between the government and NOCs

During this stage, the objectives of the reforms for the government were to a large extent similar to the previous stage. The government intended enhance the commercial performance of the sector. Whilst at the same time, it needed to take consideration of the

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[453] Lin, K.-C. (2003). Divergent Responses to Oil Price Shocks: Explaining Continuity and Radical Change in Industrial Governance of the Chinese Oil and Petrochemical sector. *Unpublished draft acquired from the author*. p.41

social impacts of the reform measures, and to the condition of the national capacity of the country.

These factors were reflected in the reform measures during this stage. For example, the main purpose of the reforms of the regulatory framework and of the fiscal and financial regimes were to further embrace the market economy, to reduce the direct role of the government in enterprises, and to formalise the relationship between the government and the NOCs, driven mainly by the need to enhance the commercial performance of NOCs. On the other hand, the tightened pricing and distribution systems reflected the social concerns of the government.

NOCs also played an obvious role during the reforms at this stage. Challenged by increasing commercial pressure, these companies started to exert their influence by lobbying for favourable policies and other terms from the government. This tendency could be demonstrated by the industrial structure reform when CNPC and Sinopec received access to lucrative import and export business from the government after strong lobbying by them.

6.2.7.1 The tasks of the petroleum sector

Similar to the previous stage, the commercial tasks assigned to the NOCs by the government were still multiple, including production and profitability. The enhancement of accounting standards, and the further reform of the fiscal and financial regimes

enhanced the role of profitability in measuring the performance of NOCs compared to the previous stage. However, the lack of an effective market mechanism to form the price signals remained the largest obstacle in the role of profitability. As a result, production was still important in measuring the performance of NOCs. The autonomy of the petroleum sector was further enhanced in terms of the investment and financing activities, but was weakened in marketing activities, due to the reforms to the pricing and distribution system.

The petroleum sector continued to play a regulatory and administrative role in supporting the government. Its role in supporting resource management, and pricing and distribution regulation was still strong due to the lack of the relevant government capacity in these fields. However, their extent had been reduced especially in the field of revenue and information collection, due to the employment of the new accounting standards and the fiscal regime.

Furthermore, the petroleum sector, similar to many other SOEs, still took social responsibilities including pensions, housing and healthcare as well as employment, due to the government' relevant capacity.

6.2.7.2 The supporting system

At this stage, the government resorted to a complex of direct administrative orders, market and economic means, and political means by appointing senior managers.

However, the direct control of the government over NOCs still remained important measure, especially in terms of control over the production levels, investment plans for large projects, as well as control over the pricing and distribution of products. This was mainly due to the lack of effective market signals in the petroleum sector. Meanwhile, there was an increase in the share of the material incentive for the NOCs as a result of the enhanced fiscal and financial system.

6.3 The evaluation of the reforms

The reforms during this stage reflected the government's targets of enhancing the commercial performance of the NOCs, while at the same time maintaining the control over these companies for stabilisation considerations. The above targets, including the commercial targets, were relatively well-addressed by the government through the reforms during this stage. The establishment of new accounting standards greatly enhanced the effectiveness of the government in collecting information. The employment of new fiscal regime also enhanced the ability of the government in collecting revenue and therefore the government could afford to rely less on the NOCs for these regulatory functions. The establishment of a more transparent formalised and fairer fiscal and financial regime was also helpful in providing signals for the NOCs to make decisions. These moves were on the right track to help the government in removing regulatory functions from the NOCs, to avoid the negative "conflict of identity effect", to establish a more market-driven environment for the NOCs and to provide them with a higher degree of autonomy.

The effectiveness of the reforms could be reflected by active internal reforms conducted by the NOCs to increase their commercial performance. The tasks assigned to BUs were enhanced by placing more emphasis on profitability indicators, and by adding long-term performance indicators, such as the State Assets Maintenance Ratio, and the Reserve and Production Ratio (section 6.2.3.2). The supporting system was also enhanced along with newly established accounting and budgeting systems, as well as stricter control over cost and investment. These approaches improved the quality of information available to the headquarters to measure the performance of BUs, and also helped to enhance the governance of business units. The separation of core commercial activities and non-core activities of BUs, which was conducted on a trial basis during this stage, was also positive in enhancing their performance. This helped the headquarters to collect better information on BUs' commercial performance, therefore put a higher pressure on commercial and non-commercial units.

However, the largest obstacle for the government to further commercialise the NOCs was the lack of a liberalised market in setting prices and allocating resources. This restricted the role of profitability, and prevented the government from assigning the NOCs with further autonomy in terms of investment, financing, and marketing. This also prevented the NOCs from developing their commercial competence. Similar to the previous stage, a regulated pricing and distribution system not only obscured the profitability indicators in reflecting the real commercial performance of NOCs, but also

restricted the major components of the supporting system, namely the fiscal and financial systems, to function well.

Another main weakness of the system was caused by the limited progress made in building up the government's capacity to regulate the petroleum sector, and in providing social welfare support. The abolition of the Ministry of Energy during this stage showed that the government still preferred to rely on NOCs for necessary support rather than foster its own capacity in regulating the petroleum sector.[454]

Their continued hold over regulatory responsibility enabled the NOCs to argue for policies which were favourable to them. The limited foreign involvement in the Chinese petroleum sector is one example. Also, the existence of social functions, such as employment, schools and hospitals, made it difficult for the government to refuse requirements from NOCs for financial support. It also made it difficult for the government to measure the profitability of NOCs. The social burden of the NOCs also resulted in inefficient investment. In the case of employment, for example, driven by the needs to provide employment for children of their existing staff, the NOCs had invested a large amount of their precious capital in non-relevant activities, such as food processing, tourism, construction, light industrial and transportation and catering.[455]

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[454] Gao, S., Liang, S., Geng, Z., Yang, Q., & Guo, Y. (2003). *The Review and Evaluation of the Energy Strategy and Policy (In Chinese)*. Beijing Energy Research Institute of National Development and Reform Commission. p.15, 50

[455] CNPC. (1999). *CNPC Yearbook 1998 (In Chinese)*. Beijing: The Petroleum Industry Publishing House. p.146

This had a negative impact on commercial performance of NOCs.

The weakness of the system in enhancing commercial performance during this stage could be reflected by the reserve, production, and profit figure. During this stage, the performance of the petroleum sector was not promising in terms of reserve and production with only modest increase, as shown in the table 6.8 and figure 6.6. The revenue indicators had increased significantly, which may be attributed to the continuous increase of price level by the government during this stage, rather than an improvement of commercial performance. (Table 6.9 and figure 6.7).

Table 6-8 The reserve, production and revenue indicators of CNPC

Year	Production	New capacity	Proven oil Reserve	Asset (original value)	Asset (net value)	Revenue
	(mn Ton)	(mn ton/year)	bn ton	(RMB bn)	(RMB bn)	(RMB bn)
1988	136.19	15.8	13.47	80.37	53.00	26.94
1989	136.65	17.0	13.9	97.62	67.25	34.84
1990	136.92	13.3	14.33	123.44	89.51	40.48
1991	137.22	14.2	14.86	147.25	109.57	53.61
1992	138.03	15.1	15.33	173.65	130.87	63.43
1993	139.13	15.4	15.77	201.26	131.74	95.38
1994	139	15.4	16.27	220.26	135.70	112.47
1995	139.81	16.4	16.66	274.68	147.81	131.18
1996	141.41	17.0	17.4	307.41	161.82	142.93
1997	143.22	16.0	18.0	375.12	180.26	167.83
1998	107.38	9.6	13.67	387.38	215.45	269.51

Figure 6-6 The reserve, production and revenue indicators of CNPC

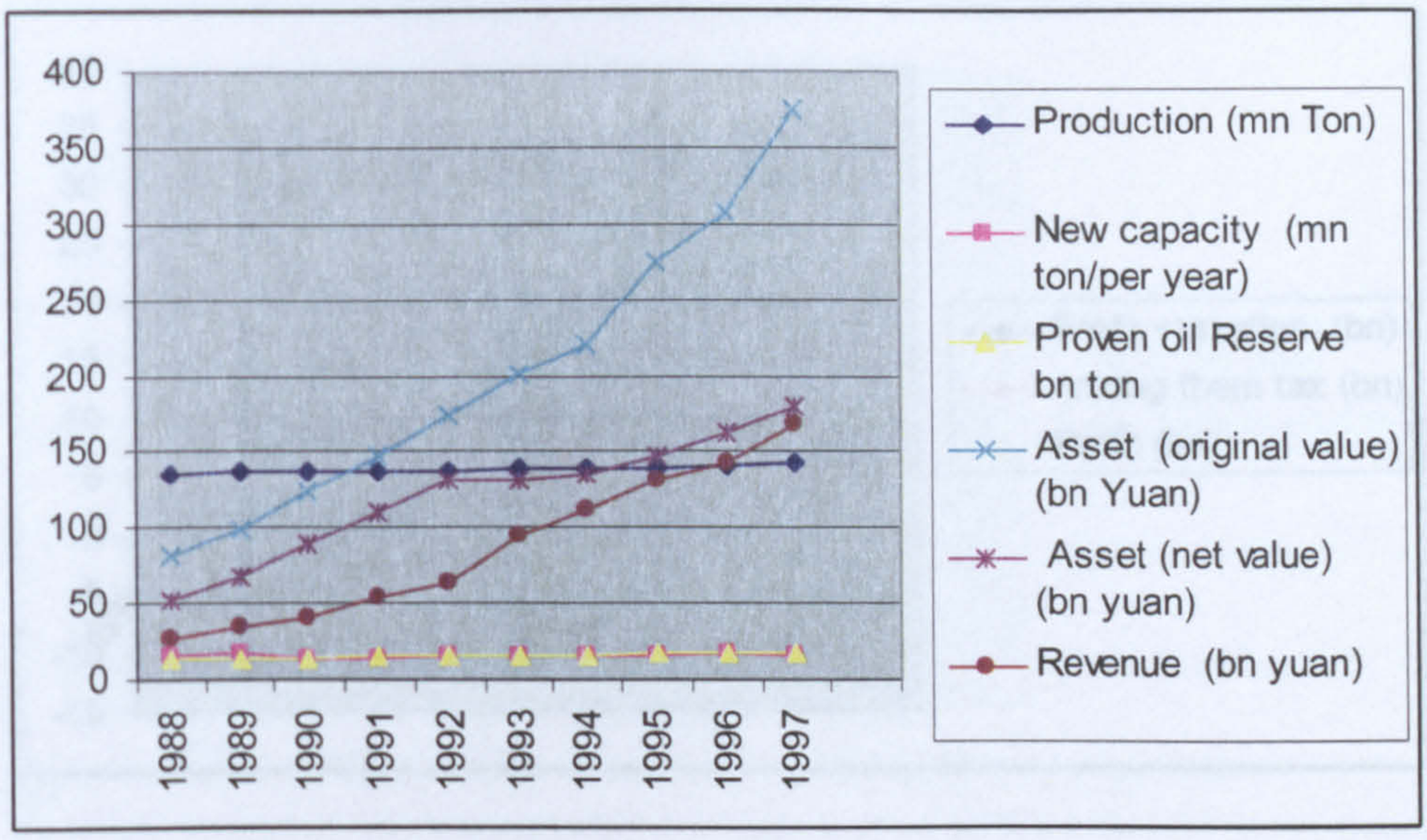
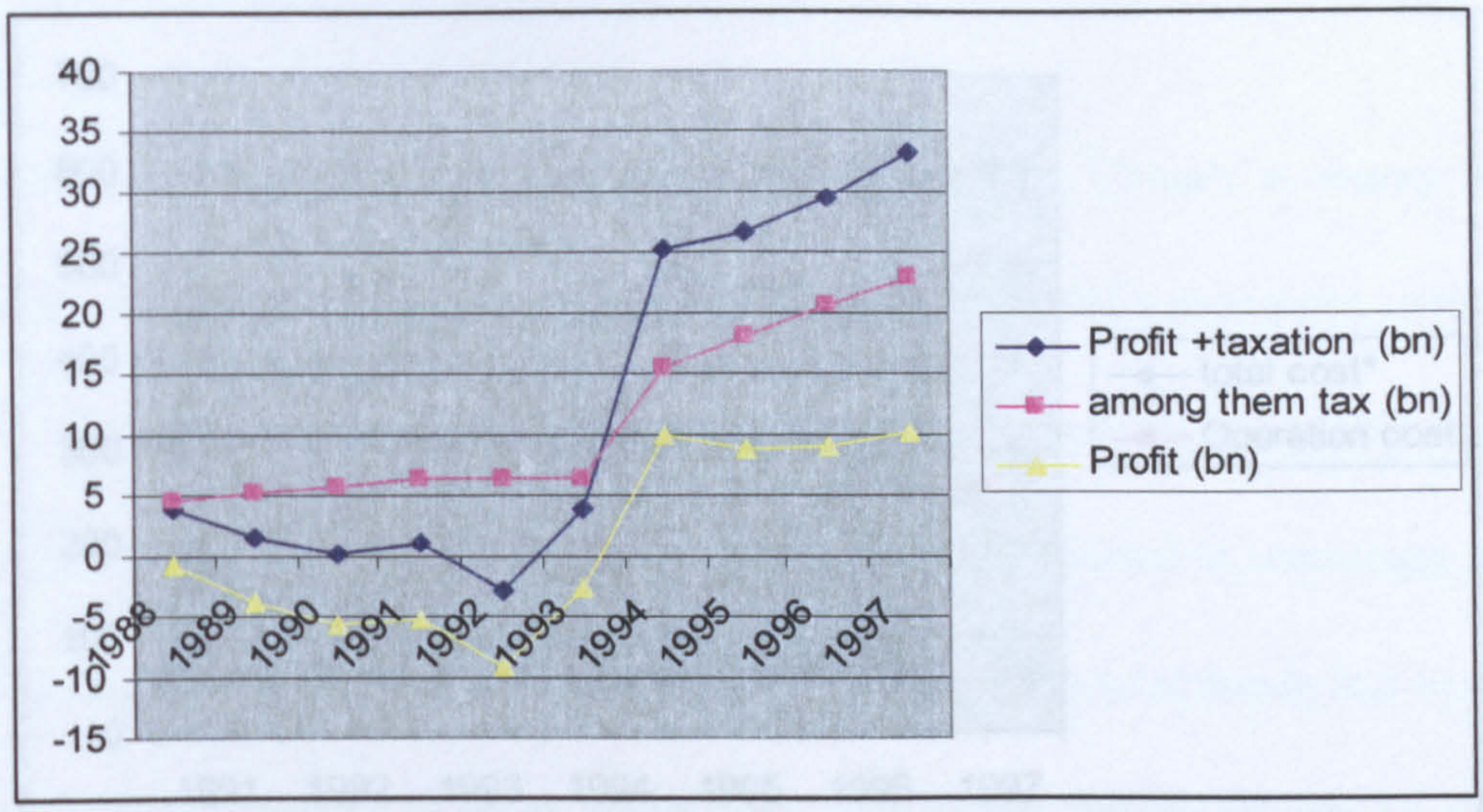


Table 6-9 The profit indicators of CNPC[456]

Year	Before tax profit	Tax	Profit
	(RMB bn)	(RMB bn)	(RMB bn)
1988	3.9	4.64	-0.74
1989	1.52	5.39	-3.87
1990	0.20	5.79	-5.59
1991	1.08	6.36	-5.28
1992	-2.89	6.37	-9.26
1993	3.91	6.54	-2.63
1994	25.36	15.49	9.87
1995	26.75	18.09	8.66
1996	29.57	20.59	8.98
1997	33.18	22.92	10.26
1998	36.59	30.11	6.48

[456] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House, p73

Figure 6-7 The profit indicators of CNPC



The cost of CNPC kept rising during this stage. However the growth rate of cost slowed down during this stage since 1994, as could be seen in Table 6.9. This may be attributed to the stricter cost control of CNPC (table 6.10 and figure 6.8).

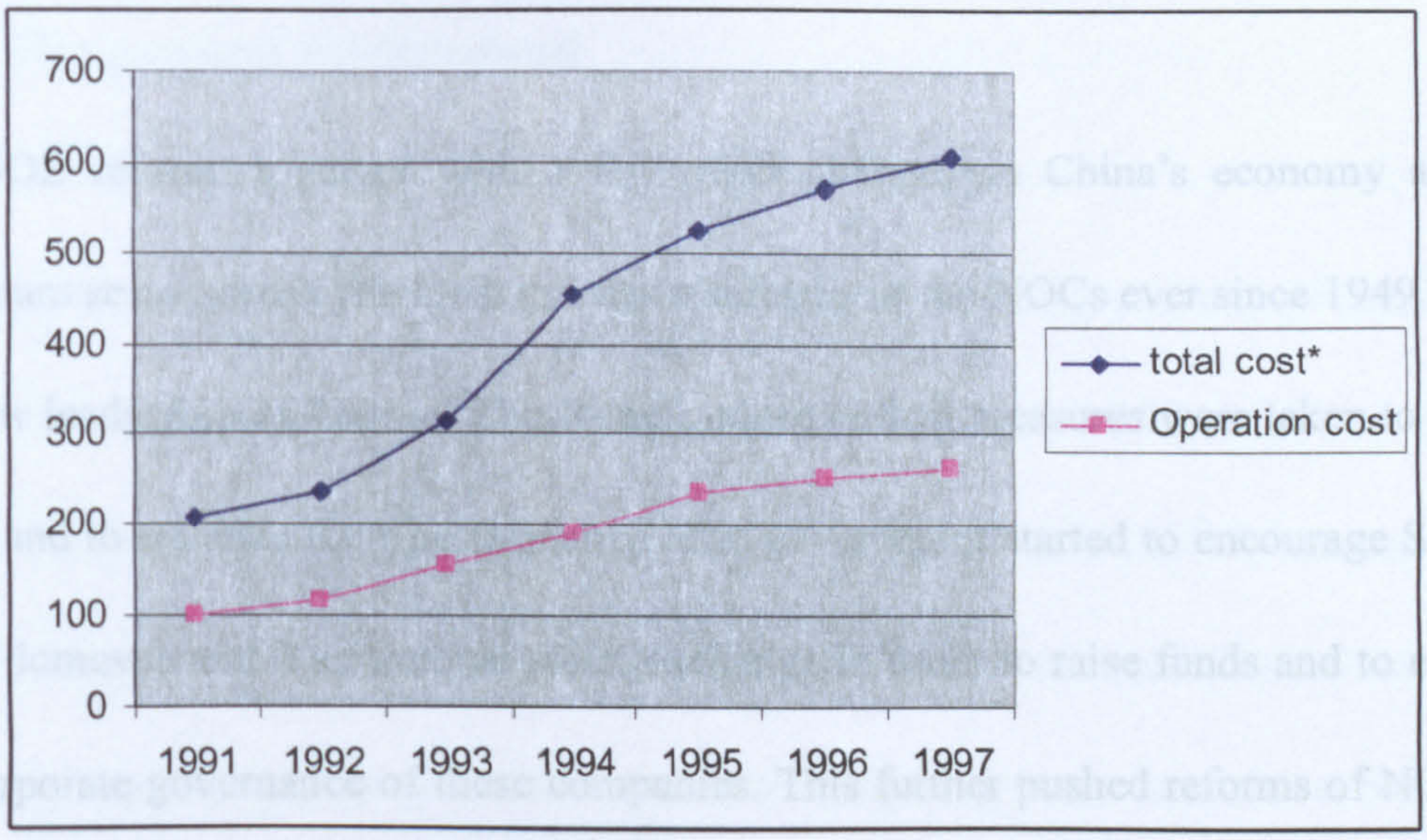
Table 6-10 The cost indicators of CNPC[457]

	Cost (RMB yuan/ton)	
year	total cost*	Operation cost
1991	208	100
1992	238	118
1993	313	154
1994	453	190
1995	525	236
1996	569	253
1997	605	264

* Including operation cost and other fees, such as oilfield maintenance fee, reserve usage fee, and depreciation etc

[457] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.75. These costs were defined in the Chinese terms, which were different from the concept of western style costs. Chinese petroleum industry did not use the western style costs until they were quoted in the western stock market since 2000.

Figure 6-8 The cost indicators of CNPC



7 NOC REFORMS IN CHINA - STAGE FOUR (1998-2006)

The SOE reform, together with a few other changes in China's economy and the petroleum sector, drove the most extensive reforms of the NOCs ever since 1949. Under the new leadership of Premier Zhu Rongji, more radical measures were taken to reform SOEs and to enhance their performance. The government started to encourage SOEs to list in domestic and international stock exchange in order to raise funds and to enhance the corporate governance of these companies. This further pushed reforms of NOCs, as the petroleum sector was often selected by the government as a pioneer and flagship of core reform measures before they were applied to SOEs in other sectors.[458]

The NOCs' overseas listing overcame many weaknesses of the P-A relationship during the previous stages. The employment of external monitoring and control system served as an effective supplement of the weak capacity of the government. The employment of international accounting standards largely enhanced the quality and quantity of information related to the NOCs' activities. The adoption of a new pricing formula started to connect the domestic and international market and provide the NOCs with market price signals. The background of the reforms, the measures of the reforms and the effectiveness of these reforms will be analysed in more detail in this chapter.

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[458] Interview of a senior finance officer of PetroChina in Beijing in 2006. It was said that Zhu Rongji wanted to list a few large SOEs overseas, in order to raise capital and to enhance the corporate governance of these companies by exert stricter regulations from western stock markets regulators. To ensure successful IPO, companies should have high quality assets and attractive rate of return. Petroleum companies with reserves were believed to be in this category.

7.1 The general background

7.1.1 The economic background: the reforms of SOEs

Since 1998, the reform of SOEs gained momentum under the leadership of Zhu Rongji, when he was formally elected as Premier in early 1998. An SOE reform strategy of "grasping the large and releasing the small" was passed by the 15th Communist Party Congress in 1997.[459] According to the strategy, large and centrally owned SOEs, mainly energy and resource related, or those participating in sectors with economies of scale, should be reformed in order to improve their commercial performance, while retaining the government control over them.[460]

The further reform of SOEs was essential for the country as its economy was threatened by severe loss of SOEs. These deficits was partially due to the transition of the country's economy from a seller's to a buyer's market, and partially caused by the insufficient reforms of SOEs during the previous stage as discussed in chapter 5.[461] Under a buyer's market, there existed a surplus of goods and services, which largely reduced profit margins of producers, especially these of SOEs, who were far less competitive than

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[459] Naughton, B. (2006). *The Chinese Economy: Transitions and Growth*. Cambridge, Massachusetts; London, England The MIT Press. p.100, 301. Regional governments, as owners of many middle and small sized SOEs, were allowed an unprecedented freedom to "privatise, bankrupt, sell and auction, and merger and acquisition" of their SOEs.

[460] Ibid. p.302

[461] Yusuf, S. (2005). *Under New Ownership: Privatizing China's State-Owned Enterprises*. Herndon, VA, USA: World Bank. p.77. Investorwords. (2007). "Definition of Sellers' Market and Buyers' Market." Retrieved 09 Feb, 2007, from http://www.investorwords.com/4470/sellers_market.html. Sellers' market is defined as a market which has more buyers than sellers. High prices result from this excess of demand over supply. Buyers' market is defined as a market which has more sellers than buyers. Low prices result from this excess of supply over demand. From 1995 to 1998 the ratio of goods shortage in China was reduced to zero and the ratio of surplus for goods climbed to 25.8% (from 18.3%).

their private peers.[462] In 1995, half of the industrial sector, including textile, chemicals and mechanicals, with SOEs as the major players, utilised no more than 60% of its production capacity.[463] As a result, in late 1990s, a majority of SOEs were plagued with severe deficits and bad debts, which greatly threatened the country's overall economic performance.[464] The urgency to reform SOEs was also caused by the need to protect the domestic economy, as the country decided to join the WTO and acquired the entrance in 2001.[465] Facing competition from foreign players, the government was under pressure to improve the competitiveness of its SOEs.[466]

To address these challenges, a proposal for radical SOE reform was drafted and launched by the government under the leadership of Premier Zhu. According to the proposal, middle and small SOEs were allowed to adopt flexible reform measures such

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[462] By 1999, the prices of goods being set by the government was further reduced and about 86% of prices of goods were set by market. The more liberalised market system was a severe challenge to SOEs and the expansionary economic model the country pursued. Under that model, production was the core of Chinese economy. The government assigned production target to SOEs by signing responsibility contract with them. But the weakness of the model in its negligence of the investment and operative efficiency was problematic in a more market driven environment. Yusuf, S. (2005). *Under New Ownership: Privatizing China's State-Owned Enterprises*. Herndon, VA, USA: World Bank. p.75

[463] Lin, K.-C. (2003). Divergent Responses to Oil Price Shocks: Explaining Continuity and Radical Change in Industrial Governance of the Chinese Oil and Petrochemical sector. *Unpublished draft acquired from the author*. p.16.

[464] Yusuf, S. (2005). *Under New Ownership: Privatizing China's State-Owned Enterprises*. Herndon, VA, USA: World Bank. p.77. Profit of SOEs dropped to an 'all-time low of less than 2% of the gross value of state enterprises industrial output' in 1998. NBS. (2006). GDP Growth 1952-2006 (in Chinese). In *China Statistical Yearbook 2004*: National Bureau of Statistics, China.

[465] Wong, C. P. W. (1996). Part One People's Republic of China. In P. B. Rana & N. Hamid (Eds.), *From Centrally Planned to Market Economies: The Asian Approach (Volume 2 People's Republic of China and Mongolia)* Oxford University Press.

[466] Lin, K.-C. (2006). Disembedding Socialist Firms as a Statist Project: Restructuring the Chinese Oil Industry, 1997-2002. *Enterprise & Society: The International Journal of Business History, 7*(1), 59-97.p.16. Qiu, B. (2000). *Chinese Petroleum Sector challenging WTO (In Chinese)*. Beijing: The Petroleum Industry Publishing House.

as privatisation, bankruptcy, sale and auction, and merger and acquisition.[467] For large SOEs,[468] most of them energy and resource related or participating in sectors with economies of scales, reform measures were applied while the government still retained control over them.[469] The major elements of SOE reforms during this stage included the enhancement of the regulatory capacity to regulate SOEs in order to take over more regulatory and social responsibilities of SOEs, the increased competition from the private sector, the reforms of ownership policies including privatisation, and the enhancement of the governance in SOEs by establishing new governance systems.

7.1.1.1 The separation of non-commercial responsibility from the SOEs

The government started to enhance its regulatory capacity in order to gradually relieve SOEs from social responsibilities. A specific government agency, the State Asset Supervision and Administration Commission ("SASAC"), was established in 2003 to represent the government as a shareholder and to monitor the performance of SOEs. More details on SASAC will be analysed in section 7.2.1.3.[470] Measures were also

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[467] Chiu, B., & Lewis, M. K. (2006). *Reforming China's State-Owned Enterprises and Banks*. Cheltenham, UK.Northampton, MA, US: Edward Elgar. p.55, 66. The idea was confirmed in the fifteenth party congress in Oct 1997 and Ninth National People's Party Congress in March 1998. Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.140, 154. XinHua-Net. The Rough Lined Model of Economy Growth Should be Terminated (In Chinese). Retrieved 16th, Dec., 2006, from http://news.xinhuanet.com/politics/2005-10/18/content_3641685.htm

[468] Large SOEs are defined by the government as big SOEs of fiscal or strategic importance to the government. The government issued an important official document specified the dominance of SOEs in strategically important fields in 1999.

[469] Chiu, B., & Lewis, M. K. (2006). *Reforming China's State-Owned Enterprises and Banks*. Cheltenham, UK.Northampton, MA, US: Edward Elgar. p.67. Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.177. In 1997, central government controlled SOEs were encouraged to form large enterprise groups. In early 1998 government required large scale SOEs to establish modern enterprises system and eliminate loss.

[470] PerkinsCoie. (2003). New Framework for the Administration of State-owned Assets in China. Retrieved 29 Nov, 2006, from http://www.perkinscoie.com/content/ren/updates/china/070903.htm.

taken to transfer social responsibility from SOEs to the government. For example, most educational institutions formerly run by SOEs were transferred to the Ministry of Education during this stage.[471] Reforms of medical and social support system were also launched in order to enhance the role of the government in these areas. Additionally, prices for most commodities were further liberalised to alleviate the burden of subsidies hitherto borne by SOEs. Furthermore, there was a more relaxed attitude in hiring and firing workers as the development of private sector became increasingly an important employer.[472] All these efforts were aimed at relieving the social burdens of SOEs, and enabling them to focus more on commercial performance.

7.1.1.2 The enhancement of the role of private sector in formerly public-owned sector

The government also further removed protections and privileges from SOEs and started to permit the private sector to participate in and compete with SOEs in certain sectors formerly reserved for the SOEs. A series of new laws and regulations were passed in an attempt to establish a level playing field for both SOEs and private enterprises. In March 1999, a clause in the Chinese constitution, which read "the private economy is a supplement to public ownership", was substituted with "the non-public sector, including individual and private businesses, as an important component to the socialist market

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[471] PetroChina. (1999). IPO Prospectus of PetroChina. Retrieved 18 Nov, 2006, from www.petrochina.com.cn

[472] Chiu, B., & Lewis, M. K. (2006). *Reforming China's State-Owned Enterprises and Banks*. Cheltenham, UK.Northampton, MA, US: Edward Elgar. p.67, 77. Four assets management companies were founded by the government using capital from the central treasury. These companies provided capital to SOEs for them to return loan to banks. Through this mechanism, the bank loans of SOEs to bank became the shares hold by these asset management companies on behalf of the government.

economy".[473] In 2000, a National Development and Reform Commission (NDRC, former SPC, see section 7.2) document was released, which clarified that the government would "eliminate all restrictive and discriminatory regulations that are not friendly towards private investment and the development of private economy".[474] In 2005, another important document was issued by the State Council to remove restrictions on the involvement of private capital in certain sectors that had long been monopolised by SOEs, such as electricity, telecommunications, railways, civil aviation and petroleum.[475]

7.1.1.3 The ownership reforms of the SOEs

The government also started to reform the ownership structure of SOEs through measures such as privatisation, public-listing, and Sino-foreign joint ventures in order to expand the channel of financing and enhance incentive and governance from private shareholders.[476] The booming domestic stock market during this stage provided a good avenue for SOEs facing a paucity of capital.[477] From 1998-2000, Chinese SOEs raised RMB 493.4 bn from the domestic stock market.[478] Large scale SOEs were also

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[473] Chiu, B., & Lewis, M. K. (2006). *Reforming China's State-Owned Enterprises and Banks*. Cheltenham, UK.Northampton, MA, US: Edward Elgar. p.75

[474] Ibid. p.74

[475] Ma, S. (2005). Guiding Private Capital into the Petroleum Sector (In Chinese). Retrieved 20 Nov 2006, from http://www.ce.cn/. The document is titled "Opinion on Encouraging, Supporting and Guiding the Development of the Non-Public Sectors of the Economy".

[476] In 1997, the Party's fifteenth congress encouraged SOEs to attract more capital from the private sector, by exploring new ownership structures, such as share-holding companies and public-listing, as well as Sino-foreign joint ventures. In 1998, the "Security Law of PRC" was passed to enhance the safety standards in the operation of domestic stock markets.

[477] Lin, K.-C. (2003). Divergent Responses to Oil Price Shocks: Explaining Continuity and Radical Change in Industrial Governance of the Chinese Oil and Petrochemical sector. *Unpublished draft acquired from the author*. p.23

[478] Ibid. p.24, 25

encouraged to conduct public listing on international stock markets.[479]

7.1.1.4 The enhancement of corporate governance structure in SOEs

The government also expended effort to enhance the corporate governance structure of SOEs by further promoting the employment of the Modern Enterprise System ("MES"), which had been introduced in the previous stage. In 1999, the new Corporation Law of PRC was revised to provide a stronger support the expansion of the MES and its adoption in SOEs. By 2001, 76% key SOEs had adopted the MES.[480]

7.1.2 The petroleum background: changes in productivity and other factors

7.1.2.1 The domestic supply and demand

As the inability of the domestic supply to meet the demand was further increased during this stage, the security of supply became an increasingly important theme for the country. Since 1998, the domestic petroleum demand remained strong along with strong economic growth (see figure 7.1, the Chinese GDP at current price). The average annual growth of petroleum demand remained an average of 7.5% from 1998 to 2005 (see figure 7.2).[481] This trend is set to continue in the coming decades given the strong projection of economic growth of the country (see table 7.1).

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[479] Chiu, B., & Lewis, M. K. (2006). *Reforming China's State-Owned Enterprises and Banks*. Cheltenham, UK.Northampton, MA, US: Edward Elgar. p.66

[480] Yuan, B.-H. (1999). The Review of a Few Issues of Socialism Economic of China in the Last 50 Years (In Chinese). *The Research of Modern China History, 5-6*.

[481] Calculated according to the BP statistics review, BP. (2006). "BP Statistical Review of World Energy 2006." Retrieved 21 Jan 2007, from http://www.bp.com/productlanding.do?categoryId=6842&contentId=7021390. PetroChina. (2006). *The Research of Chinese Petroleum Taxation (In Chinese)*. Beijing: PetroChina Internal Research Report. p.28

Figure 7-1 The Chinese GDP at current prices of 2005 (1990-2005)[482]

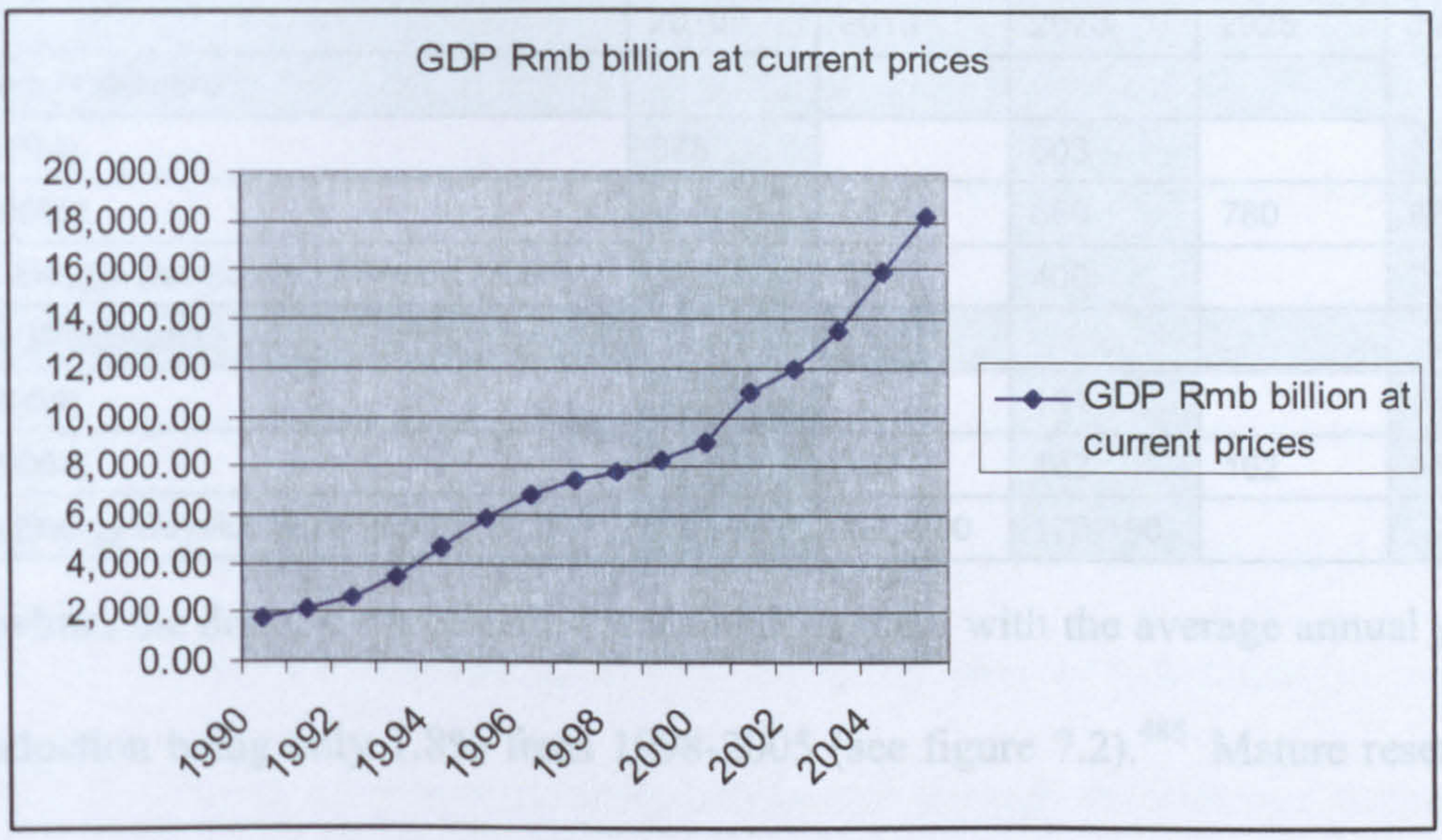
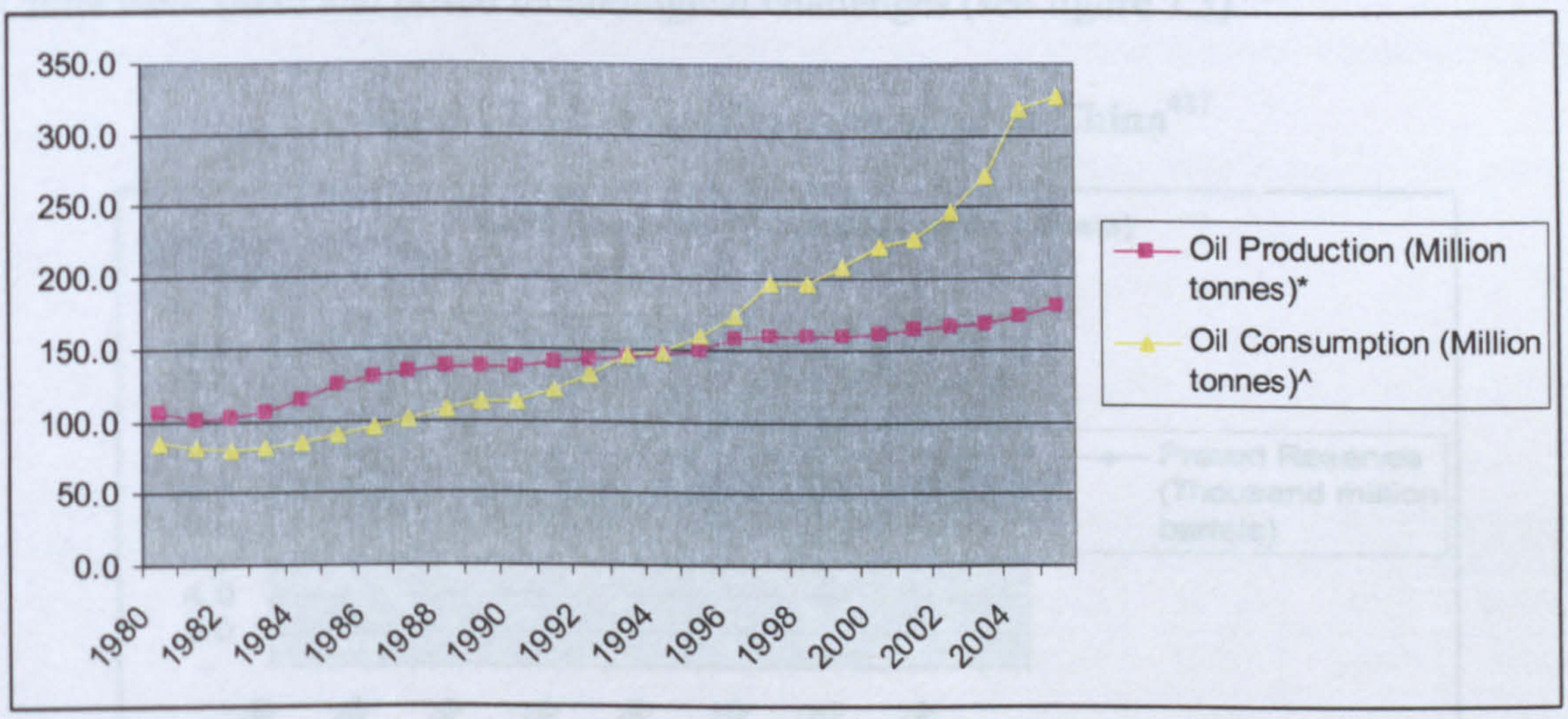


Figure 7-2 Oil Production and Consumption (1980-2005)[483]



*Oil production includes crude oil, shale oil, oil sands and NGLs (natural gas liquids - the liquid ontent of natural gas where this is recovered separately).

*Oil consumption includes inland demand plus international aviation and marine bunkers and refinery fuel and loss

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[482] NBS. (2006). GDP Growth 1952-2006 (in Chinese). In *China Statistical Yearbook 2004*: National Bureau of Statistics, China.

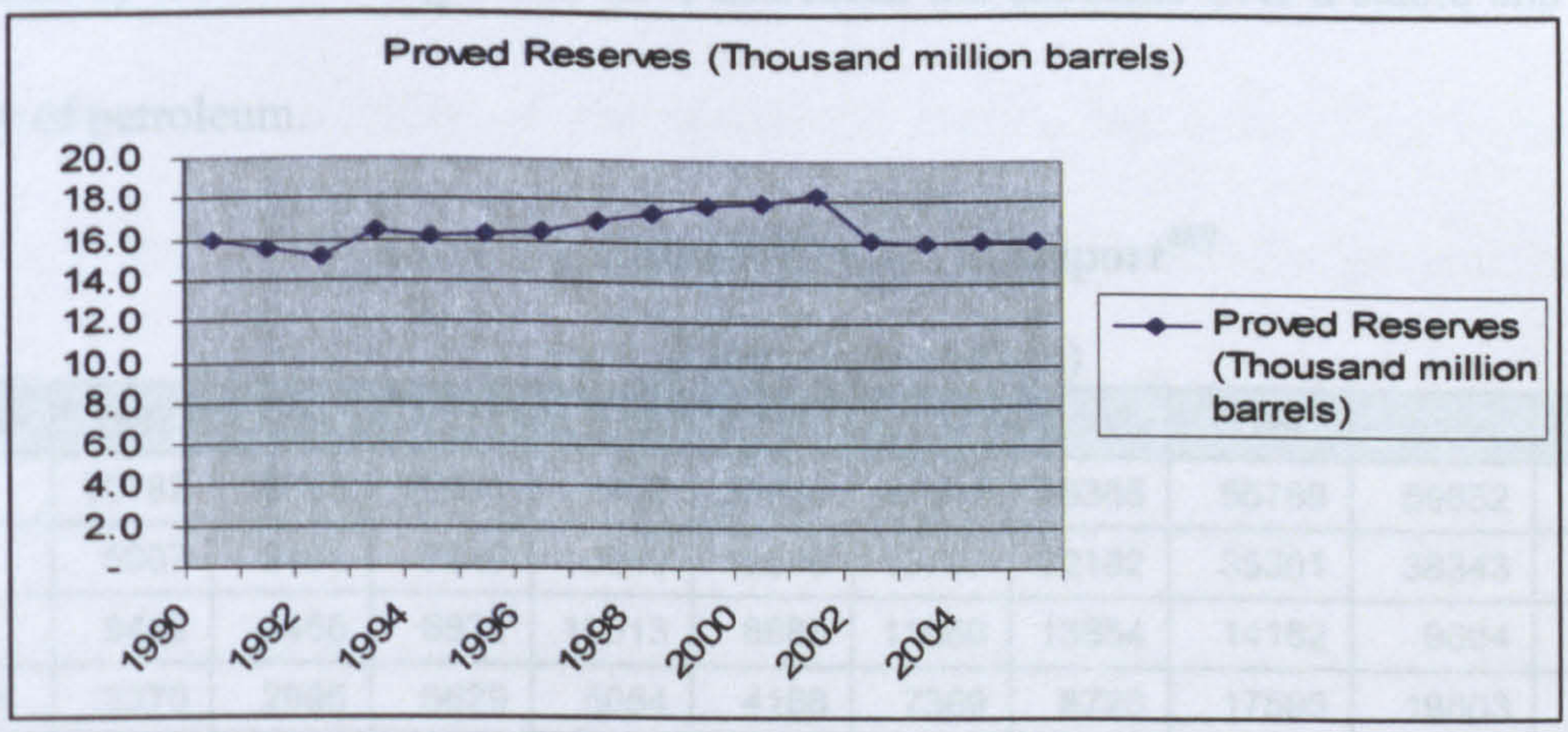
[483] BP. (2006). "BP Statistical Review of World Energy 2006." Retrieved 21 Jan 2007, from http://www.bp.com/productlanding.do?categoryId=6842&contentId=7021390.

Table 7-1 China Oil Demand and Supply Projections (mn tonnes per year)[484]

	2010	2015	2020	2025	2030
Demand Projections					
IEA (2004)	375		503		636
EIA(2006a)	450	540	660	780	920
China Energy Development Report (2003)	310	350	400		
Supply Projections					
IEA (2004)	168		137		112
EIA(2006a)	172	167	162	162	167
China Energy Development Report (2003)	170-190	180-200	170-190		

Meanwhile, the domestic production remained stagnant with the average annual growth of production being only 1.8% from 1998-2005 (see figure 7.2).[485] Mature reserves in Eastern and Northern China depleted significantly, whilst the new reserves in Western China were small and posed technological challenges (see figure 7.3).[486]

Figure 7-3 Proven Reserves of oil in China[487]



[484] Oliver, H. H. (2006). Reducing China's Thirst for Foreign Oil: Moving Towards a Less Oil-Dependent Road Transport System *China Environment Series 2006 (Woodrow Wilson International Center for Scholars)*, 41-58. p.42

[485] Calculated according to the BP statistics review, BP. (2006). "BP Statistical Review of World Energy 2006." Retrieved 21 Jan 2007, from http://www.bp.com/productlanding.do?categoryId=6842&contentId=7021390.

[486] PetroChina. (2006). *The Research of Chinese Petroleum Taxation (In Chinese)*. Beijing: PetroChina Internal Research Report. p.27

[487] BP. (2006). "BP Statistical Review of World Energy 2006." Retrieved 21 Jan 2007, from http://www.bp.com/productlanding.do?categoryId=6842&contentId=7021390. Proved reserves of oil - Generally taken to be those quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known reservoirs under existing economic and operating conditions.

7.1.2.2 An increasing dependency on imported oil and the security of supply concerns

China's dependency on imported oil continued to increase rapidly during this stage. The import of oil has increased at an annual rate of 20% from 1998-2005 (see figure 7.4).[488] The higher exposure to the imported oil made security of supply a major concern for the government. Most of China's oil was imported from the Middle East and Africa, areas plagued with wars and political instability, especially after 9/11. Meanwhile, more than four fifths of Chinese oil imports were transported through the Malacca straits, where pirate attacks are rampant. Additionally, concerns expressed by many Chinese officials and scholars over the lack of a strong navy to ward off a possible naval blockade of the sea lanes by the US during a war have increased the concerns over a stable and secure supply of petroleum.

Table 7-2 China's Crude Oil Import[489]

(Unit: thousand ton)

Region	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
ME	16782	16668	16904	37650	33860	34392	46365	55789	59852	65605
A	5907	2191	7249	16949	13546	15797	22182	35301	38343	45787
AP	9412	5468	6832	10613	8683	11850	13854	14162	9664	5162
EWH	3370	2995	5629	5054	4168	7369	8726	17595	19803	28626
TOTAL	35470	27323	36614	70265	60256	69408	91126	122846	127662	145180

*ME: Middle East; A: Africa; AP: Asia Pacific; EWH: European and West Hemisphere

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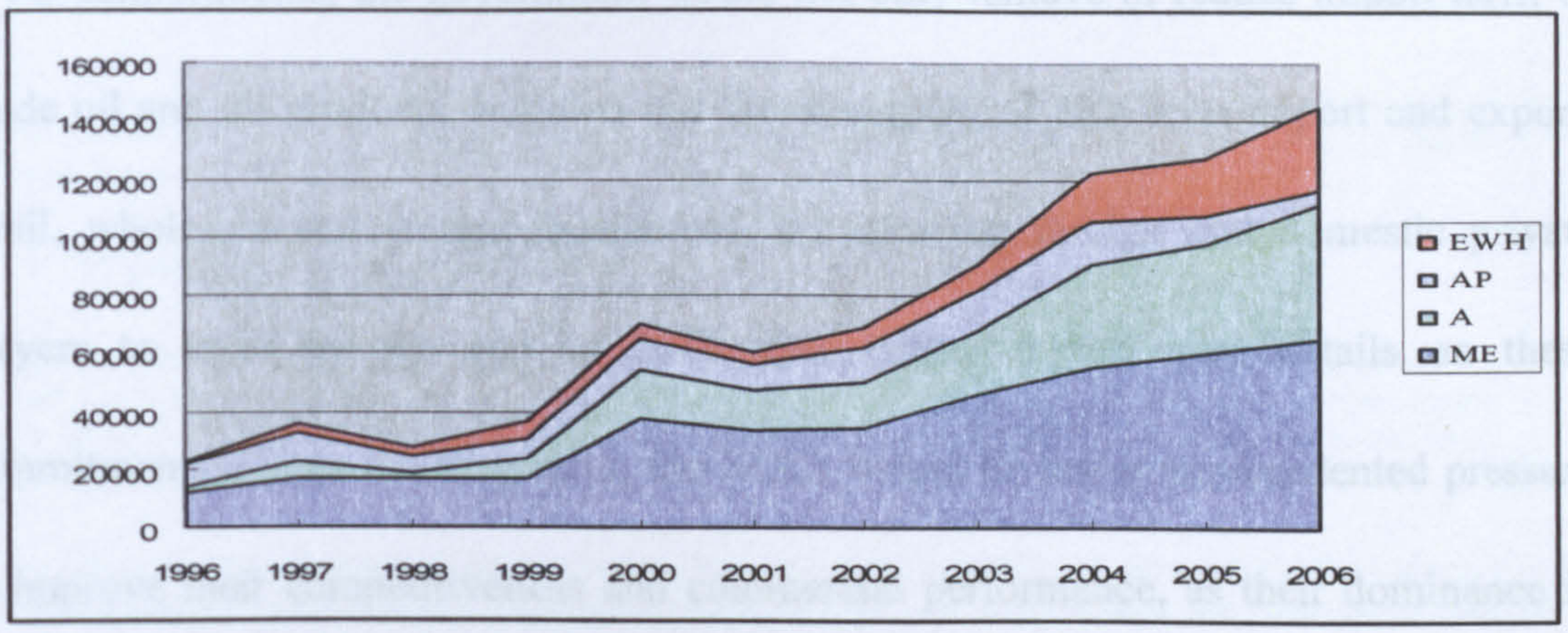
[488] Calculated according to the BP statistics review, BP. (2006). "BP Statistical Review of World Energy 2006."Retrieved 21 Jan 2007, from http://www.bp.com/productlanding.do?categoryId=6842&contentId=7021390.

[489] Tian, C.-R. (2000). Review of China's Oil Imports and Exports in 1999 (In Chinese). *International Petroleum Economics, 8*(2). Tian, C.-R. (2005). Review of China's Oil Imports and Exports in 2004 (In Chinese). *International Petroleum Economics, 13*(3).

Figure 7-4 China's Crude Oil Import

(Unit: thousand ton)



Increasing exposure to imported oil has further exposed the country to fluctuations and market risks in the international petroleum market. The lack of experience in dealing with the market, as well as the administrative nature of the domestic pricing system increased the vulnerability of the country to handle the risks. This vulnerability concerned the government and might have further prevented the government from liberalising the domestic market. However, the increasing difficulty and cost to maintain the regulatory pricing system in order to insulate the domestic market from the international market put the government under significant pressure. For example, during the 1998 price collapse, when the international oil price reduced to 11.93 $/bbl, rampant smuggling of cheap oil inside the country forced CNPC to cut its production for more than 4 months.

7.1.2.3 The World Trade Organisation ("WTO") entrance

China's WTO entrance in 2001 also had a significant impact on the petroleum sector,

which was traditionally protected by tariff and non-tariff barriers. According to the WTO commitments, the government would not only remove or reduce import tariff of crude oil and oil products, but also end the monopoly of NOCs on import and export, retail, wholesale and storage businesses, by allowing foreign and domestic private players to enter by the end of 2006 (See table 7.3 for more details on these commitments).[490] In the long term, the NOCs would be under unprecedented pressure to improve their competitiveness and commercial performance, as their dominance in lucrative petroleum businesses was under strong challenge. However, in the short term, especially during the transition period, the government would be unwilling to see its SOEs, operating in strategic sectors, defeated by foreign players. Hence it intended to provide extra support in order to build up these so called "national champions".

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[490] People'sDaily. (2004). WTO Commitments of China Retrieved 7 Feb, 2007, from http://english.peopledaily.com.cn/200410/06/eng20041006_159179.html. JonesDays. (2006). WTO Commitments of China Retrieved 7 Feb, 2007, from http://www.jonesday com/pubs/pubs_detail.aspx?pubID=S3940. "The PRC's Regulation on the Administration of the Crude Oil Market" was issued by the Ministry of Commerce on December 4, 2006, came into force on January 1, 2007.

Table 7-3 The petroleum related commitments of WTO entrance[491]

1. The tariff cut

As required by the WTO, China's tariff on crude oil will be eliminated from the previous 6%. Tariffs on gasoline will be lowered to 5% from 9%. Tariffs on diesel, kerosene and fuel oil will remain unchanged at 6%, 9% and 6% respectively.

2. The opening up of imports/export business

In the past, the government has used a license and quota system favoring imports of crude oil over oil products, in order to maximise domestic refining capacity. Only several state owned entities are recognised as "State trading companies" when it comes to importing the vast majority of crude oil and refined products· the Sinochem, the Unipec, COC and Zhuhai Zhenrong Co

On the import side, oil import restrictions are being dismantled in the wake of China's entry to the WTO by allowing more private and foreign importers into the market. In 2002, 4 mn tons of refined products, and 7.2 mn tons of crude oil, were allowed to be imported by "non-State trading companies" that had successfully obtained import licenses, but which were not necessarily State-owned or controlled. The new importers will be allowed to increase their crude oil imports by 15 per cent a year for the next 10 years. Their refined oil imports will also be allowed to rise by 15% until 2004. The import quota on refined oil was eliminated since then.

3. The opening up of wholesale and retail business

On the distribution field, foreign companies are allowed to run the retail business by the end of 2004 and wholesale business in 2006.

In 11 Dec 2004 China opened its retail market. In the past, this profitable market is principally controlled by Sinopec, CNPC, CNOOC, and Sinochem. In Dec 2006, China opened its wholesale market, which has been monopolised by two State-owned conglomerates Sinopec and CNPC. Two regulations were issued to encourage market-oriented competition, enhance branding awareness and improve service quality. Private companies and foreign companies such as BP, Exxon Mobil or Total are permitted to enter the crude oil sale and storage market as long as they meet the requirements set forth in the official Regulation. According to the Regulation, a licensing system will be implemented to regulate the operation of the domestic crude oil market. Two licenses are available: a crude oil sale license ("Sale License") and a crude oil storage license ("Storage License"). The Sale License and the Storage License together are herein referred to as "Crude Oil Licenses." The term "crude oil" covers both domestically produced and imported crude oil.

7.1.3 Changes in national capacity

The regulatory capacity of the government in regulating national economy was greatly enhanced during this stage along with the issuance of new laws and regulations to regulate economic activities, the establishment of new government entities such as SASAC, and the accumulated experiences of the government in regulating a more market-driven economy.[492] The market based economic rules established during the

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[491] Ibid

[492] PetroChina. (2006). *The Petroleum Regulatory Framework (In Chinese)*. Beijing: PetroChina Internal Research Report. p.6. People'sNet. (2006). SASAC Published the Performance for Central SOEs, Two

previous stage (chapter 6) had been well tested and adjusted and were also well understood by enterprises following years of operations.[493] The capacity of the government to take responsibility of social functions was also enhanced due to reforms in medical and social support systems and the transferring of educational function from SOEs to the government.

However, the government still lacked petroleum specific regulatory capacity, although it started to address this issue during this stage. Therefore, the government still needed the NOCs' support in regulating certain aspects of the petroleum sector, such as resource management, the pricing and distribution systems, and quality control for certain products in the retail market.

The commercial capacity of the NOCs was enhanced due to increased autonomy assigned to them during the previous stage, and their overseas activities involving

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SOEs Were not Qualified for Annual Bonus (in Chinese). Retrieved 07 April 2008, from http://finance.people.com.cn/GB/1039/4731394.html. The SASAC was established in 2003 to take charge of the performance management of major SOEs and their heads. The head of SOEs are defined as general manager/ director, deputy general manager/ director, CFO, members of the board of directors of SOEs. Since 2004, the SASAC started to sign annual performance agreement with the head of 138 central SOEs including the three NOCs, and to evaluate the performance of them. The performance of the head of SOEs is evaluated on an annual basis and three-year basis to reflect the short and long-term performance of them. For annual performance, there were two main set of indicators involved in the performance contract: (1) annual total profit and the rate of return on net assets; (2) others indicators that were specific for each industry and each company. For a three year performance, there were two set of indicators involved: (1) the appreciation rate for state-owned assets and the average increasing rate of business income for core business; (2) others indicators are specific for each industry and each company. The head of SOEs will be promoted/ demoted or rewarded /sanctioned according to their performance. The process was more transparent than before. Although the detailed performance indicators are not for public reviewing, the final rating of each SOEs is published (in five categories ranged from A to E).

[493] The MOF further enhanced domestic standards by requiring all 1,200 companies listed on Shenzhen and Shanghai stock markets to adopt norms similar to the International Financial Reporting Standards (IFRS). Economist. (2007). Cultural Revolution *The Economist*, 63-64.

marketing, investment and commercial management.

The market capacity of the country was also enhanced as the government further liberalised the economy. More prices of commodities were decided by the market, and a majority of enterprises was free to price and market their products. However, the market capacity for the petroleum sector had deteriorated, due to the tightened pricing and distribution systems in the previous stage, which resulted in the closure of the few commodity exchange markets for oil products.

7.1.4 The objectives of reforms

During this stage, to enhance the commercial performance of the NOCs remained to be the government's top agenda. This objective was more viable and more urgent than the previous stage, influenced by a group of factors analysed above, such as the general SOE reform, changes in regulatory capacity of the government, long-term concerns over WTO entrance, the country's increasing exposure to the international market, and the increasing difficulty and expense in maintaining the government regulated pricing and distribution systems.

The SOE reforms and the enhanced regulatory capacity of the government, enabled it to further relieve SOEs' social burden and employed more radical reform measures to enhance their performance, such as privatisation. The WTO entrance exposed the SOEs to the competition from international players Furthermore, the administrative pricing

and distribution systems became more difficult and more expensive to maintain, as the country was increasingly exposed to the international petroleum market, and this pressured the government to gradually relinquish its control over the petroleum pricing and distribution systems.

Although the security of supply and the social, political and economic impacts of reform measures kept concerning the government, it was able to design specific reform measures to overcome these issues.

7.2 The reforms of the institutional arrangement of the petroleum sector

Significant reforms of NOCs occurred during this stage with a scope and at a scale never witnessed before in China, driven by the complicated factors discussed in the section 7.1.

7.2.1 The reform of the regulatory framework

The regulatory framework of the petroleum sector underwent important changes in order to enhance the general and petroleum related regulatory capacity of the government. The SASAC and the Energy Bureau were created in 2003, while the State Energy Office and State Energy Leading Group were established in 2005.[494] This

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[494] Fesharaki, F., & Wu, K. (1998). Revitalizing China's Petroleum Industry Through Reorganization: Will it Work? *OGL Special*(Special Issue), 33-45. p.35. Yan, X.-C. (1998). *The Grand Restructure of the Chinese Petroleum Industry (In Chinese)*. Beijing The Petroleum Industrial Publishing House. p.61

section will introduce the reforms of the regulatory framework in the period from 1998 to 2001, when the regulatory capacity was weakened, and the period since 2003 when the government started to strengthen its capacity.

7.2.1.1 The reforms from 1998 to 2001

In 1998, under the leadership of Premier Zhu, the government underwent a major reform of regulatory framework (figure 7.5),[495] in order to enhance the role of the government in regulating a more market-driven economy. Through the reform, the government readjusted the functions of SPC and State Economic and Trade Commission ("SETC"). The SPC was renamed as the State Development and Planning commission ("SDPC"). Its planning role was weakened and its industrial supervisory role was transferred to SETC, making the latter a powerful agency.[496] Furthermore, the government formally removed the administrative statues of a few powerful SOEs, including the NOCs, and respective "state bureaus" named the State Bureau of Petroleum and Chemical Industry ("SBPCI") was established under the SETC to take charge of the "industrial planning and overall development strategies" of the NOCs.[497]

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[495] The reform proposal was issued through "The Notice on the reforming of the government institution" during the first meeting of the ninth People's Congress in 1998

[496] Lin, K.-C. (2003). Divergent Responses to Oil Price Shocks: Explaining Continuity and Radical Change in Industrial Governance of the Chinese Oil and Petrochemical sector. *Unpublished draft acquired from the author*. Fesharaki, F., & Wu, K. (1998). Revitalizing China's Petroleum Industry through Reorganization: Will it Work? *OGL Special*(Special Issue), 33-45.p.35

[497] Fesharaki, F., & Wu, K. (1998). Revitalizing China's Petroleum Industry through Reorganization: Will it Work? *OGL Special*(Special Issue), 33-45.p.35. OGP. (1998). Restructuring China's Oil Industry - China Petroleum Conference 1998's Supplement. China's newsletter of oil, gas and petrochemical industries, published by Xinhua News Agency, Beijing, China. For more details on the reform, see "The proposal on the establishment of two large petroleum and petrochemical corporation" by SETC in April 1998. The SBPCI was responsible to promote the further restructuring of the 7,500 state owned enterprises under CNPC and Sinopec, and to formulate a redundant policy to cut down workforce. Zhang, j. (2004). *Catch-up*

Additionally, the MGMR, the State Land Administration, the State Oceanography Bureau and the State Bureau of Survey and Mapping were merged into the Ministry of Land and Resources ("MOLR"), and their function on resource management was enhanced.[498]

These reforms separated the regulatory and commercial functions of NOCs legally, and further commercialised the NOCs. The government was empowered in regulating the strategic aspect of the petroleum sector and its resource management. However, the newly established SBPCI and MOLR were too small to regulate the massive and powerful NOCs, and the NOCs were still active in influencing the government.[499] The SBPCI bureau was disbanded three years later in 2001, and the three NOCs reported to SETC directly. The main regulatory framework of the petroleum sector by the end of 2001 is illustrated in figure 7.6.

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and Competitiveness in China: The Case of Large Firms in the Oil Industry London and New York: RoutledgeCurzon.

[498] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. Fesharaki, F., & Wu, K. (1998). Revitalizing China's Petroleum Industry Through Reorganization: Will it Work? *OGL Special*(Special Issue), 33-45. p.33. OGP. (1998). Restructuring China's Oil Industry - China Petroleum Conference 1998's Supplement. *China's newsletter of oil, gas and petrochemical industries, published by* Xinhua *News Agency, Beijing, China*

[499] It had only a bureau status which is lower than all the three NOCs. The size of the bureau was too small to cope with comprehensive coordinating work it is supposed to do.

Figure 7-5 The reform of the institutional structure in 1998

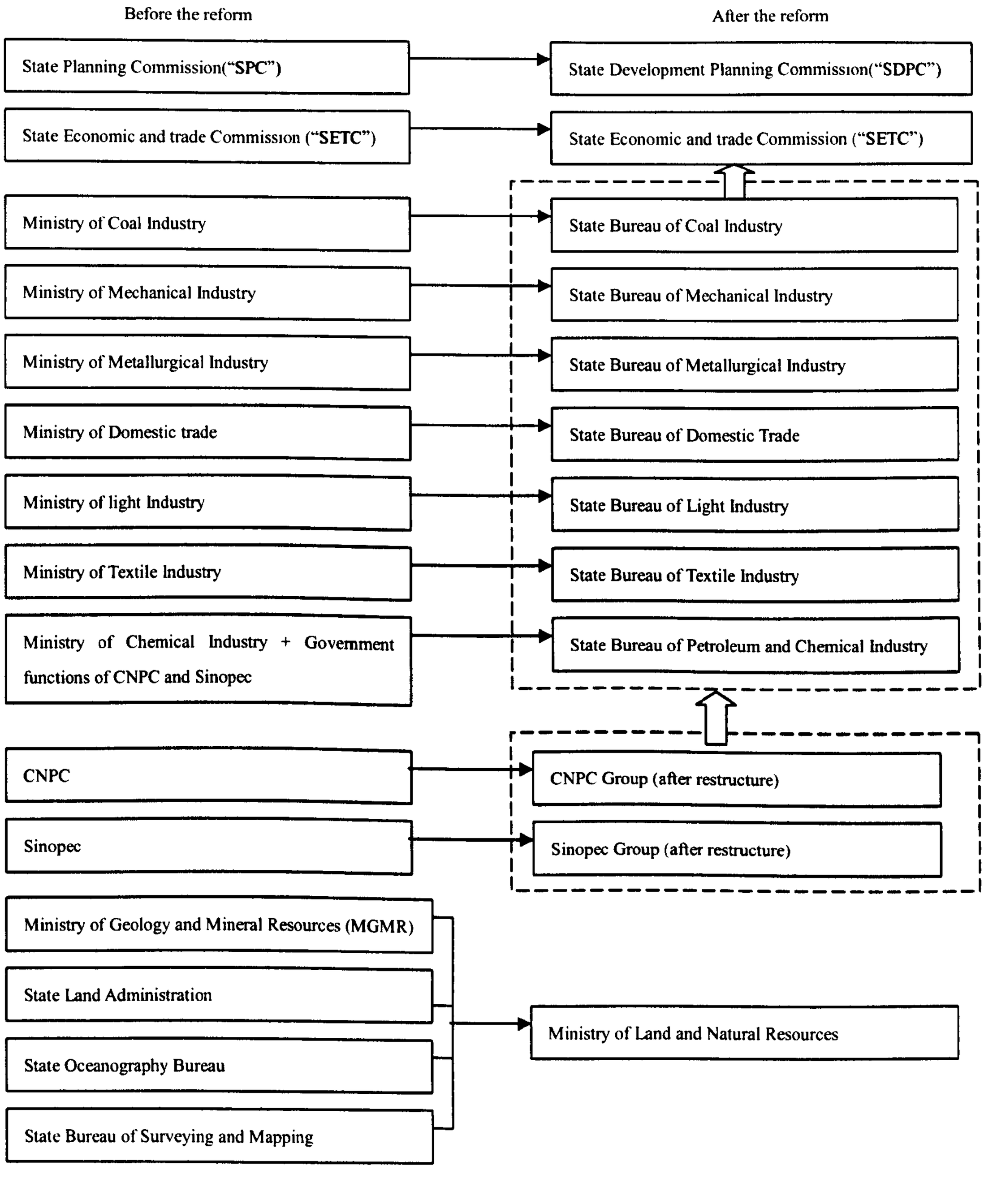
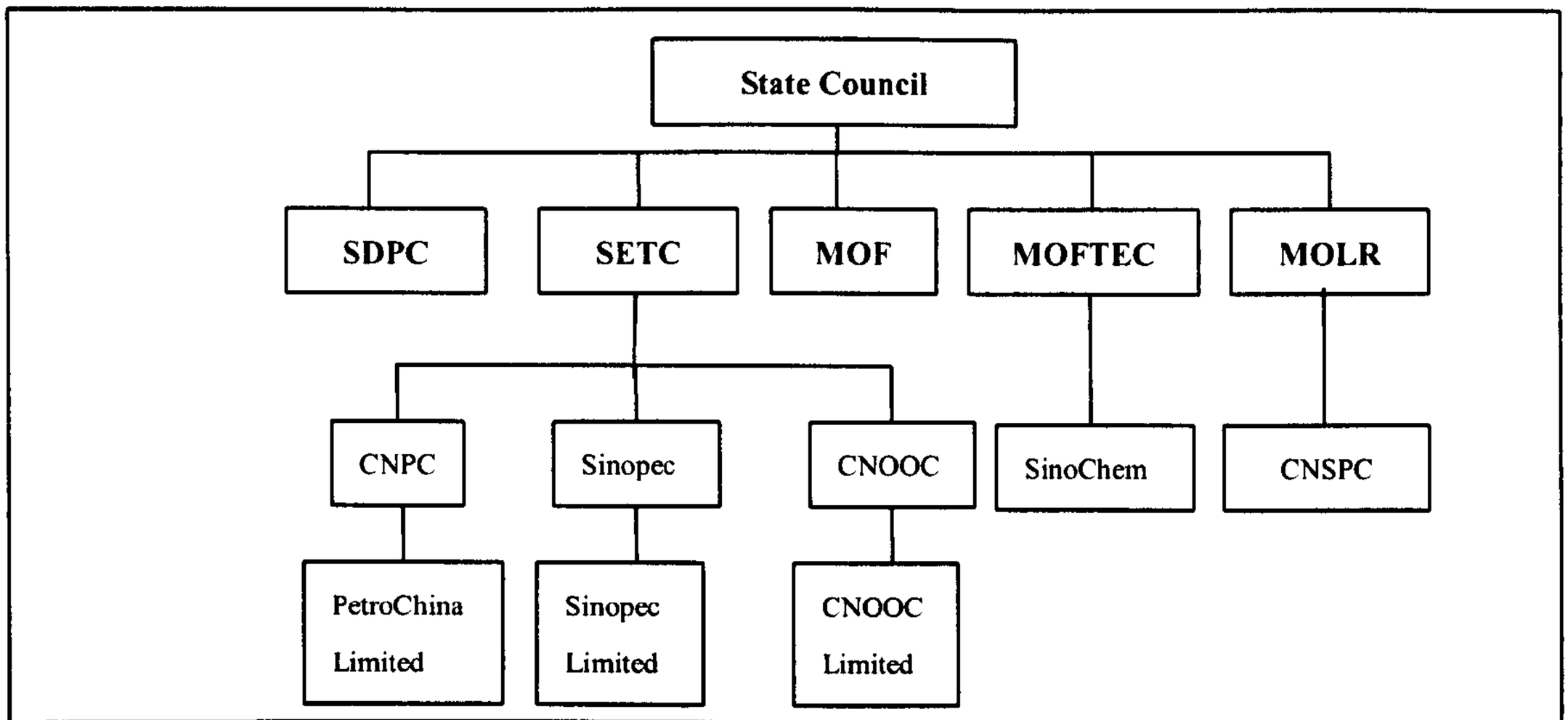


Figure 7-6 The regulatory framework (1998-2003)



SDPC: State Development and Planning Commission (1998-2003)

SETC: State Economic and Trade Commission (1998-2003)

MOF: Ministry of Finance

MOFTEC: Ministry of Foreign Trade and Economic Cooperation (1998-2003)

MOLR: Ministry of Land and Resources

CNPC: China National Petroleum Corporation

PetroChina Limited: PetroChina Company Limited

Sinopec: China Petrochemical Corporation

Sinopec limited: Sinopec Company Limited

CNOOC: China National Offshore Oil Corporation

CNOOC limited: China National Offshore Oil Company limited

CNSPC: China National Star Petroleum Corporation (before 2001), it was acquired by Sinopec after 2001

Sinochem: China National Chemical Import and Export Corporation

7.2.1.2 The reforms since 2003

In 2003, the Chinese government launched another large scale institutional reform during the third meeting of the tenth People's Congress.[500] The SETC was disbanded and its functions were transferred to the newly established SASAC, National Development and Reform Commission ("NDRC", the previous SDPC), and the

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[500] People'sNet. (2003, 7th April, 2008). The Reform of Government Institution (In Chinese). from www.people.com.cn /GB/guandian/183/6103/6104/20030318/946373.html

Ministry of Commerce ("MOC").[501] It re-acquired the industrial regulatory functions from SETC and became the major regulatory body of the petroleum sector again. Additionally, the Foreign Trade and Economic Cooperation Ministry ("MOFTEC") that used to control the licence and quota management of the import and export of the petroleum industry was disbanded, and the petroleum related functions of the ministry were transferred to the MOC.

The government also started to enhance its energy related regulatory capacity, having realised the weakness of the previous regulatory framework in relying on powerful SOEs. An Energy Bureau was established under NDRC in 2003, with only 30 staff.[502] The frequent energy shortages and disruptions since 2003 further exposed the inaqequacy of the energy regulatory system. In response, in 2005, two more energy-related institutions were established by the government, namely the Energy Leading Group ("ELG"), which was a high level coordination entity led by Premier Wen Jiabao and two vice premiers, with senior officers from other major government ministries as members, as well as the State Energy Office ("SEO"), which was the standing office of the Energy Leading Group.[503]

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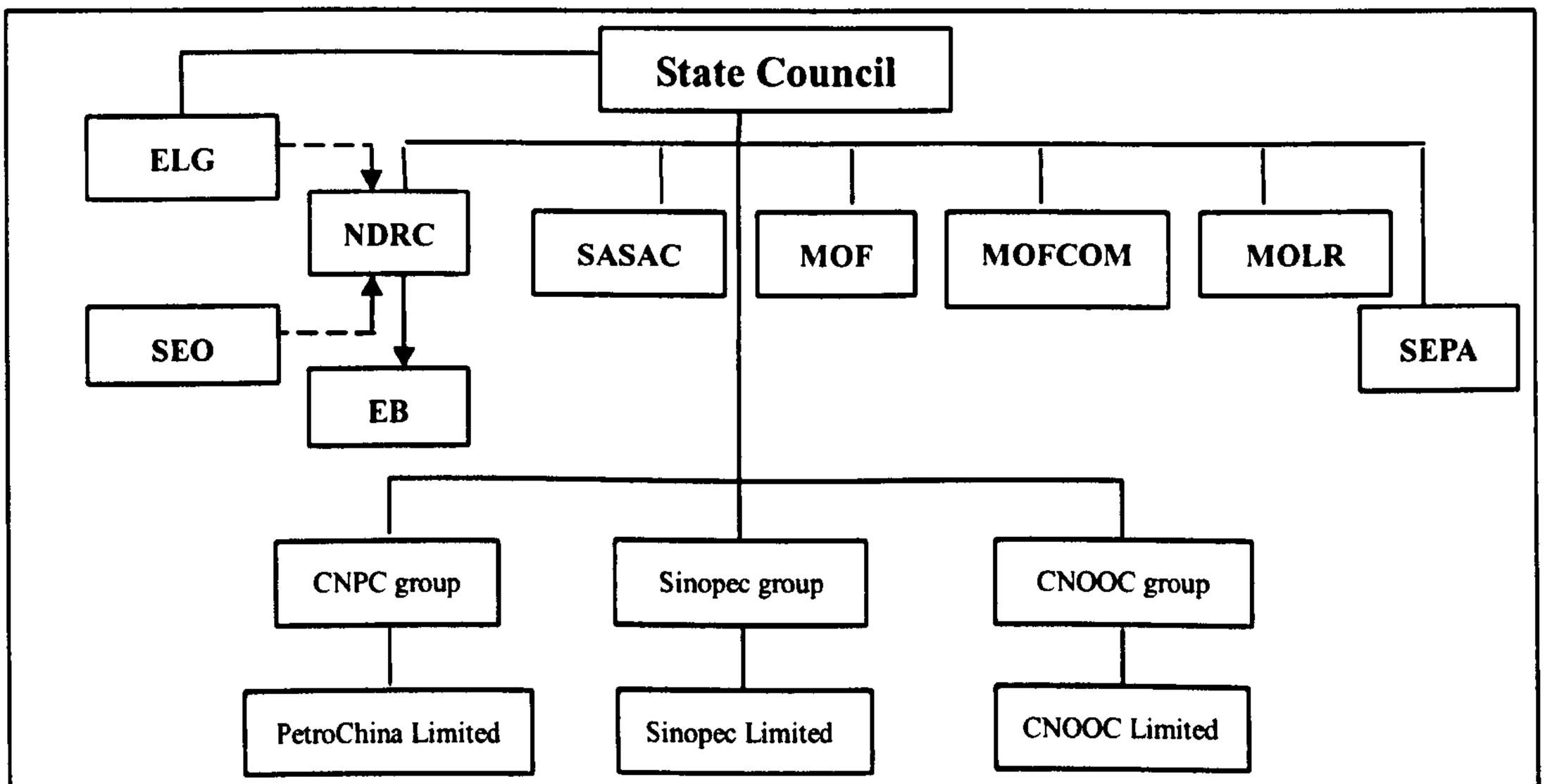
[501] The function of managing the performance of SOEs was transferred to SASAC. The function of industrial planning, short and mid term coordination was transferred to NDRC. The function of domestic and foreign trade was transferred to the Ministry of Commerce. PerkinsCoie. (2003). The Establishment of SASAC Retrieved 7 Feb, 2007, from http://www.perkinscoie.com/content/ren/updates/china/070903.htm. SASAC. (2003). *The Method to Regulate the Performance Management of the head of Central SOEs*. Retrieved. From SASAC.

[502] JinghuaTimes. (2005, 31st May). The Establishment of State Energy Leading Group (In Chinese). *Jinghua Times*, p. A02. OxfordAnalytica. (2005). China: New Structure for Energy Policy *Oxford analytica Brief*.

[503] Ibid. The major ministries involved included NDRC, the Ministry of Foreign Affairs, the SASAC, Ministry of Commerce, Commission of Science, Technology and Industry for National Defense, and SERC

The new regulatory framework of the petroleum sector is demonstrated in Figure 7.7, and the major role of each institution is listed in table 7.4. Among all the regulatory institutions, the NDRC remained the major body in making industrial policies, and the two newly established energy entities were the main bodies dealing with the general energy policies.

Figure 7-7 The regulatory framework (2007)



ELG:	Energy Leading Group
SEO:	State Energy Office (of Energy Leading Group)
NDRC:	National Development and Reform Commission
EB:	Energy Bureau (of NDRC)
SASAC:	State Asset Supervision and Administration Commission
MOF:	Ministry of Finance
MOC:	Ministry of Commerce
MOLR:	Ministry of Land and Resources
SEPA:	State Environmental Protection Administration
CNPC:	China National Petroleum Corporation (holding company)
PetroChina Limited:	PetroChina Company Limited (listed company)
Sinopec:	China Petrochemical Corporation (holding company)
Sinopec limited:	Sinopec Company Limited (listed company)
CNOOC:	China National Offshore Oil Corporation (holding company)
CNOOC Limited:	China National Offshore Oil Corporation Limited (listed company)

Table 7-4 The functions of major regulatory entities

Energy Leading Group (ELG)/State Energy Office (SEO):

The ELG is a high level coordinating entity to be responsible for the State Council. Its main job is to examine the general energy issue and submit proposal for the state council to approval. The SEO was the standing organisation of the leading group. It has a vice ministry status and operates within NDRC. The main responsibilities of the SEO are (1) To formulate energy development strategy; (2)To conduct research on key policies such as energy development and conservation, energy security and accident dealing system, energy and foreign cooperation.

National Development and Reform Commission (NDRC)/ Energy Bureau (EB):

The Commission was established in March 2003 to consolidate the authorities and functions of the former SDPC and the former SETC. The commission (1) has the industry administration and policy coordination authority over China's oil and gas industry; (2) determines mandatory minimum volumes and applicable prices of natural gas to be supplied to certain fertilizer producers; (3) publishes guidance prices for natural gas and retail median guidance prices for certain refined products, including gasoline and diesel; (4) approves significant petroleum, natural gas, oil refinery and chemical projects set forth under the Catalogues of Investment Projects Approved by the Central Government; and (5) approves Sino-foreign equity and cooperative projects exceeding certain value. EB is the main body in NDRC to deal with energy issues.

State Asset Supervision and Administration Commission (SASAC):

The commission represents the govemment to administrate the assets of state-owned enterprises. The main responsibilities of the commission are: (1) To represent the state as investors of the NOCs; (2) To supervise the NOCs to maintain and increase the value of state assets; (3) To improve the corporate governance structure of NOCs; (4) To investigate and approve the development plan and strategy of the NOCs; (5) To devise the guiding principles over the income distribution standards of NOCs; (6) To control the overall remuneration level of the NOCs; (7) To appoint and fire the head of the NOCs according to legal procedure, to devise the remuneration for the head of the NOCs, and to reward or sanction the performance of the head of NOCs.

Ministry of Finance (MOF):

The Ministry regulated the petroleum sector from industrial and company perspective. Its main function include: (1) To regulate the taxation system of the petroleum sector; (2) To regulate the profit share between government and NOCs; (3) To involve in the reform policy of the NOCs and devise the financial system for the NOCs;

Ministry of Commerce (MOC):

The Ministry was established in March 2003 to consolidate the authorities and functions of the former SETC and the former MFTEC: (1) sets the import/export volume quotas for crude oil and refined products;(2) issues import and export licenses for crude oil and refined products to oil and gas companies that have obtained import and export quotas; and (3) examines and approves production sharing contracts and Sino-foreign equity and cooperative joint venture contracts.

Ministry of Land and Resources (MOLR):

The ministry has the authority for (1) granting, examining and approving oil and gas exploration and production licenses, the administration of registration and transfer of exploration and production licenses. (2) To organise the investigation, evaluation of petroleum resources, and the plan for the protection and utilisation of petroleum resources; (3) To approve and designate blocks for foreign cooperation; (4) To issue extraction permit.

State Environmental Protection Administration (SEPA): to approval Environmental impact reports submitted by the NOCs

7.2.2 The reforms of the industrial structure (1998)

The industrial structure of the petroleum sector also underwent radical commercialisation reforms, in three major steps during this stage driven mainly by the government intention to increase the commercial performance of the NOCs. Firstly, in 1998 CNPC and Sinopec were restructured into two vertically integrated companies based on geographical locations through a massive asset swap. Secondly, in 1999, each of the three NOCs, namely CNPC, Sinopec and CNOOC established subsidiaries, which were wholly owned at this stage, and the core commercial assets of each of the NOCs were transferred to their respective subsidiaries. Thereafter, the three new subsidiary companies were partially privatised through overseas Initial Public Offering ("IPO"). This section will focus on the introduction of the first step, and the section 7.2.3 will analyse the other two steps.

7.2.2.1 The rationales

The main rationale of the 1998 reform was the need of the government and NOCs to enhance the commercial performance of the latter through optimising the industrial structure and by enhancing competition. Other considerations of the central government, such as the need to regain control of the petroleum value chain from regional governments, for revenue or other relevant purposes, also played a role in the choice of the reform measure.

The previous industrial structure of the petroleum sector was segmented and

characterised by several NOCs and regional governments playing a dominant role in their respective part of the petroleum value chain (Table 7.5).[504] This thwarted effective competition and insulated the NOCs, especially CNPC, from market and market signals, and prevented the company from developing its marketing capacity.[505]

Table 7-5 the main players in the petroleum value chain before 1998

The specific Value chain	The main players in the value chain
Upstream-onshore	CNPC
Upstream-offshore	CNOOC
Refinery	Sinopec and local government
Petrochemicals	Sinopec, local government and Ministry of Chemical Industry
Wholesale business	Sinopec and local government
Retail business	Mainly local government
Import and export	Unipec, ChinaOil and Sinochem

Additionally, most of the marketing part of the petroleum value chain, including the wholesale and retail enterprises and petrol stations, were controlled by local governments. In the end of 1990s, only 3.5% of the overall 80 thousand gasoline stations belonged to CNPC and Sinopec.[506] These players often pursued their own commercial interests, at the cost of the interest of the government and public. For example, they often ignored the government regulated prices and sell their products at higher prices, or with lower quality than official standards.

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[504] Yan, X.-C. (1998). *The Grand Restructure of the Chinese Petroleum Industry (In Chinese.)* Beijing The Petroleum Industrial Publishing House. p.93-94

[505] Ibid. p.93-94

[506] Ibid. p.23. Lin, K.-C. (2003). Divergent Responses to Oil Price Shocks: Explaining Continuity and Radical Change in Industrial Governance of the Chinese Oil and Petrochemical sector. *Unpublished draft acquired from the author*. p.33

7.2.2.2 The decision making process

By the end of the 1990s, there were two main reform proposals supported by different vested interest groups. The first argued for the establishment of five to ten vertically integrated petroleum corporations, and the second preferred to keep the existing CNPC, Sinopec and CNOOC, and transform them into vertically integrated holding companies with oilfields and refineries.[507] According to the first one, the power would be left mainly with regional governments and BUs, it was therefore supported by large oilfields and refineries and regional governments. Whilst for the second one, the central government and headquarters of NOCs would retain the controlling power, and they therefore were the main supporters of this proposal.

The first proposal was favoured in the beginning of this stage, and a series of trial measures was carried out accordingly. In 1997, three petrochemical corporations were merged in Shandong province. In 1998, four petrochemical corporations were merged in Nanjing province. Several other similar operations were also under planning. The central government soon realised the negative effects of the proposal from its perspective, especially when it lacked institutional capacity to regulate the behaviour of the regional government and middle sized NOCs. Given the difficulty of building up a strong regulatory capacity in short term, the government was soon in favour of the second proposal.[508] Another possible consideration of the central government in

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[507] Yan, X.-C. (1998). *The Grand Restructure of the Chinese Petroleum Industry (In Chinese)*. Beijing The Petroleum Industrial Publishing House. p.4-74

[508] Ibid. p.64-74

choosing the second proposal was China's entrance into the WTO. It was believed that larger companies had a higher chance of survival when facing competition from the western companies.

7.2.2.3 The reform measures

A more detailed proposal of reform was finalised by the State Council and was implemented in 1998.[509] Accordingly, a massive swap of assets was conducted between CNPC and Sinopec. Sinopec transferred 19 refineries to CNPC in return for oilfields. After the reform, CNPC was responsible for the oilfields, refineries, sales companies and petrol stations in 11 provinces in north eastern and north western China, while Sinopec was responsible for 15 provinces in north China, central China, east and south China.[510] Additionally, the two NOCs took over the major wholesale and retail enterprises belonging to local governments. 15 of them were transferred to CNPC and 19 of them transferred to Sinopec.[511] As a result, CNPC and Sinopec became two new vertically integrated companies distinguished by geographical location, and could

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[509] Ibid. p.81-89. The timing of the reform was also carefully selected. First of all, it was carried out as part of a general regulatory framework reform, which made it difficult for the opponents to object. Secondly, it was carried out when the international oil price was as low as $10/bbl. Therefore the scale of gain and loss was small for vested interest groups, which also prevented them from objecting too hard. Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.143. The official aims of the reform, as has been published by the government, was to separate the regulatory function and commercial functions of the petroleum sector, to enhance competition, and to optimise the values chain of the industry and improve the performance of NOCs.

[510] Fesharaki, F., & Wu, K. (1998). Revitalizing China's Petroleum Industry Through Reorganization: Will it Work? *OGL Special*(Special Issue), 33-45.p.5. OGP. (1998). Restructuring China's Oil Industry - China Petroleum Conference 1998's Supplement. *China's newsletter of oil, gas and petrochemical industries, published by Xinhua News Agency, China*. Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.102. Yan, X.-C. (1998). *The Grand Restructure of the Chinese Petroleum Industry (In Chinese)*. Beijing The Petroleum Industrial Publishing House. p.88

[511] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.151

compete with each other. The production capacity of the two corporations after the restructuring is shown in tables 7.6 and 7.7.[512] The operations and structure of CNOOC remained unchanged.

Table 7-6 The production and capacity before reform (1997)[513]

	Crude oil and gas (mn tones)	%	Refinery capacity (mn tonnes)	%	Refinery capacity utilised in 1997 (mn tonnes)	%
CNPC	144.9	89.0	34.4	16.2	22.2	14.4
Sinopec	-	-	160.8	75.5	124.9	81.3
CNOOC	16.7	10.2	-	-	-	-
CNSPC and others	1.4	0.8	17.8	8.4	6.6	4.3
Total	163.01		213	100	153.7	100

Table 7-7 The production and capacity after reform (1998)[514]

	Crude oil and gas (mn tones)	%	Refinery capacity (mn tonnes)	%	Refinery capacity utilised in 1997 (mn tonnes)	%
CNPC	108.1	66.3	87.8	41.2	67.7	44.8
Sinopec	36.8	22.6	125.2	58.8	83.4	55.2
CNOOC	16.7	10.2	-	-	-	-
CNSPC and others	1.4	0.9	-	-	-	-
Total	163.0		213	100	151.1	100

7.2.3 The reforms of the industrial structure (1999-2000)

7.2.3.1 The Rationales and decision making process

In 1999, the government started to plan another round of industrial structure reforms. The initial driver for the reforms was the need to address the financial shortage of the NOCs by allowing them to raise funds through public listing in the domestic stock markets. The proposal was soon upgraded in favour of an overseas IPO, of the entire

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[512] Ibid

[513] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House, p.153. OGP. (1998). Restructuring China's Oil Industry - China Petroleum Conference 1998's Supplement. China's newsletter of oil, gas and petrochemical industries, published by Xinhua News Agency, China

[514] Ibid. The refinery figure in 1998 was adjusted slightly to include the productions of independent refineries

NOC, rather than its individual BUs.[515] This was partially due to the pressure felt by the government and the NOCs after WTO entrance.[516] It was believed that the strict standards in terms of operation and quality of information, and the monitoring and control systems imposed by international stock exchange regulators and investors could help the NOCs to improve their commercial performance. Meanwhile, the SOE reforms led by Premier Zhu encouraged large scale SOEs to list overseas, [517] and the NOCs were picked by the government as flagships, and hoped that a successful overseas listing of NOCs could lay a solid foundation for others SOEs to follow.[518]

To ensure a successful listing, the government and the NOCs developed a scheme to separate the good quality and productive assets from the remaining assets, including the service and social functions, and list only the former part.[519] This unusual move was intended to transform the previous uncompetitive NOCs with the "enterprise operating society" model into an "oil company" model which was common in the West.

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[515] OGJ. (2000). China Accelerates Shift in Energy Policy, Restructuring of State Petroleum Firms. *Oil and Gas Journal. p.5*

[516] OGP. (1998). Restructuring China's Oil Industry - China Petroleum Conference 1998's Supplement. *China's newsletter of oil, gas and petrochemical industries, published by Xinhua News Agency, Beijing, China. p.22.* Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.175.

[517] Cui, M.-X. (2006). *The 2006 Energy Development Report of China (In Chinese)*. Beijing Social Sciences Academic Press (China).p.243

[518] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.171

[519] The reform proposal was jointly designed by NOCs, the government and independent consultancy companies.

7.2.3.2 The reform measures

A reform proposal containing two steps of reforms was finalised in 1998.[520]

Step one, the separation of core commercial assets: In 1999, the three NOCs separated their high quality and core assets into three newly established respective subsidiary companies with limited liabilities. These new companies were organised according to the "oil company model". The rest of the assets were left with three holding companies. The subsidiaries were wholly owned by the respective holding companies at this stage and the holding companies continued to be entirely owned by the state. In the case of CNPC, two thirds (by value) of the company's core assets were transferred to the new company, PetroChina Company Limited (PetroChina), along with only one third of the employees, around 0.5 million.[521] This new company had 52 subsidiaries, 13 oilfields, 15 refinery and petrochemical enterprises, 21 marketing enterprises, 1 pipeline enterprise and 2 R&D institutes.[522] The core indicators of PetroChina in 1999 are shown in table 7.8.[523]

Table 7-8 The indicators of PetroChina in 1999

	Before re-valuation	After re-valuation
Total assets	280.8 RMB bn	402.0 RMB bn
Net assets	95.5 RMB bn	213.1 RMB bn
Total debts	185.3 RMB bn	188.9 RMB bn
The debts to assets ration	66%	46.99%
Employee level	0.48 mn	0.48 mn

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[520] The aims of the reform clarified by the official documents of the central government was (1) to establish modern enterprises system; (2) to separate the ownership and management and to establish a new system that is suitable for the market economy and the trend of globalisation; (3) to improve the international competitiveness of NOCs; and (4) to improve the overall profit of CNPC.

[521] IPE. (2000). Restructure, Change System and Listing, Stepping into the International Capital Market *International Petroleum Economics, Mar*, 5-7.

[522] Ibid

[523] CNPC. (2001). *CNPC Yearbook 2000 (In Chinese)*. Beijing: The Petroleum Industry Publishing House.

Core assets were defined as exploration and production, pipeline and transportation, refinery and petrochemical, and natural gas. Non-core assets comprised engineering and construction, oil field services, facilities and equipment production, logistics, as well as schools, hospitals and pensions which remained with the holding company (See table 7.9 for a detailed definition of core business and non-core business for CNPC).

Through the reform, the organisational structure and corporate governance structure of PetroChina was also enhanced (See figure 7.8). The company also established a centralised management system, through which power largely centred at the hands of the headquarters (Figure 7.9).[524]

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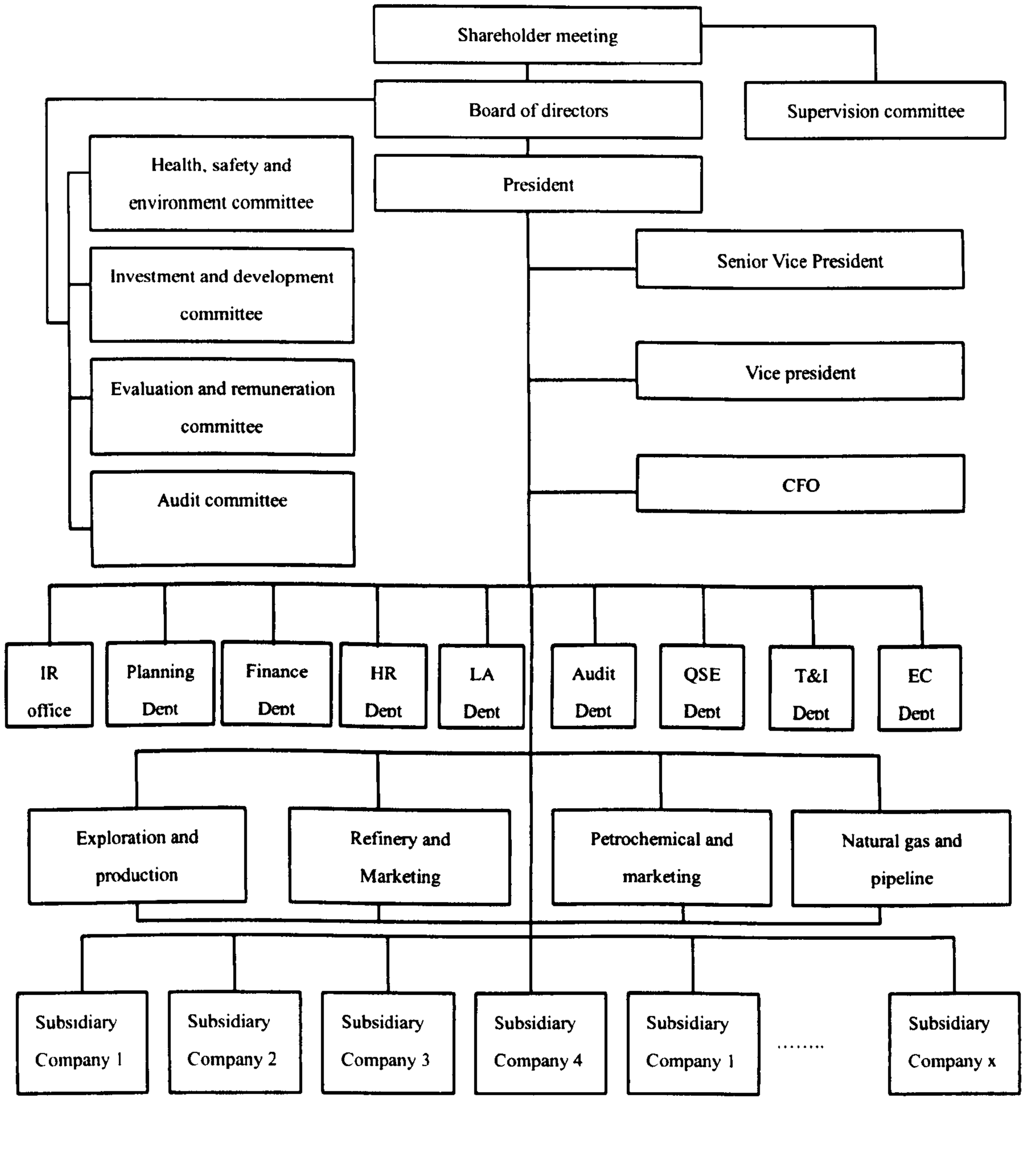
[524] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.271

Table 7-9 Division of Core and Non-core business in CNPC 1999[525]

Nature of Business	Core business	Non-core business
Oil and gas enterprises	*Oil and gas exploration and production; *Oil and gas storage and transportation; *Refining and chemicals; *Oil and gas marketing; *Exploration, engineering and planning; *Manufacturing maintenance; *Electricity and water supply in oil extraction plants.	*Technical services for core businesses: Seismic exploration, drilling, well-testing, well-logging, down-hole operation, oil-field construction *Manufacturing support and diversified businesses: machinery manufacturing and maintenance, transportation, water supply, electricity generation and supply, communication, material supply, construction materials, light industry and electronics, non-petroleum chemicals (diversified enterprises), intermediary agents, financial institutions, agriculture, food and tourism and hospitality and housekeeping services, etc *Social functions: education, medical care, social security, retired employee administration, police and prosecution and courts, fire-fighting bridge, governmental departments, community offices, property management, etc
Refining enterprises	*Key refining and chemical production; *Key supporting manufacturing equipment; *Oil and gas storage and transportation *Chemical products marketing	*Chemical complex construction and installation; *Transportation; *Overhaul; *Manufacturing support, diversified social functions
Marketing enterprises	Storage, transportation and sales of crude oil, natural gas and petroleum products	Diversified business and social functions
Pipelines and transportation enterprises	Transportation and storage of oil and gas	Pipeline construction, non-petroleum industrial production, diversified business and social functions
R&D institutions	Exploration and development research and refining research	Diversified businesses and social functions

[525] Zhang, j. (2004). *Catch-up and Competitiveness in China: The Case of Large Firms in the Oil Industry* London and New York: RoutledgeCurzon. p.112

Figure 7-8 The corporate structure and corporate governance structure of PetroChina Company Limited in 1999[526]



Step two, overseas IPO of core commercial assets: After several months, all three new limited companies were partially privatised through overseas IPOs. Each company

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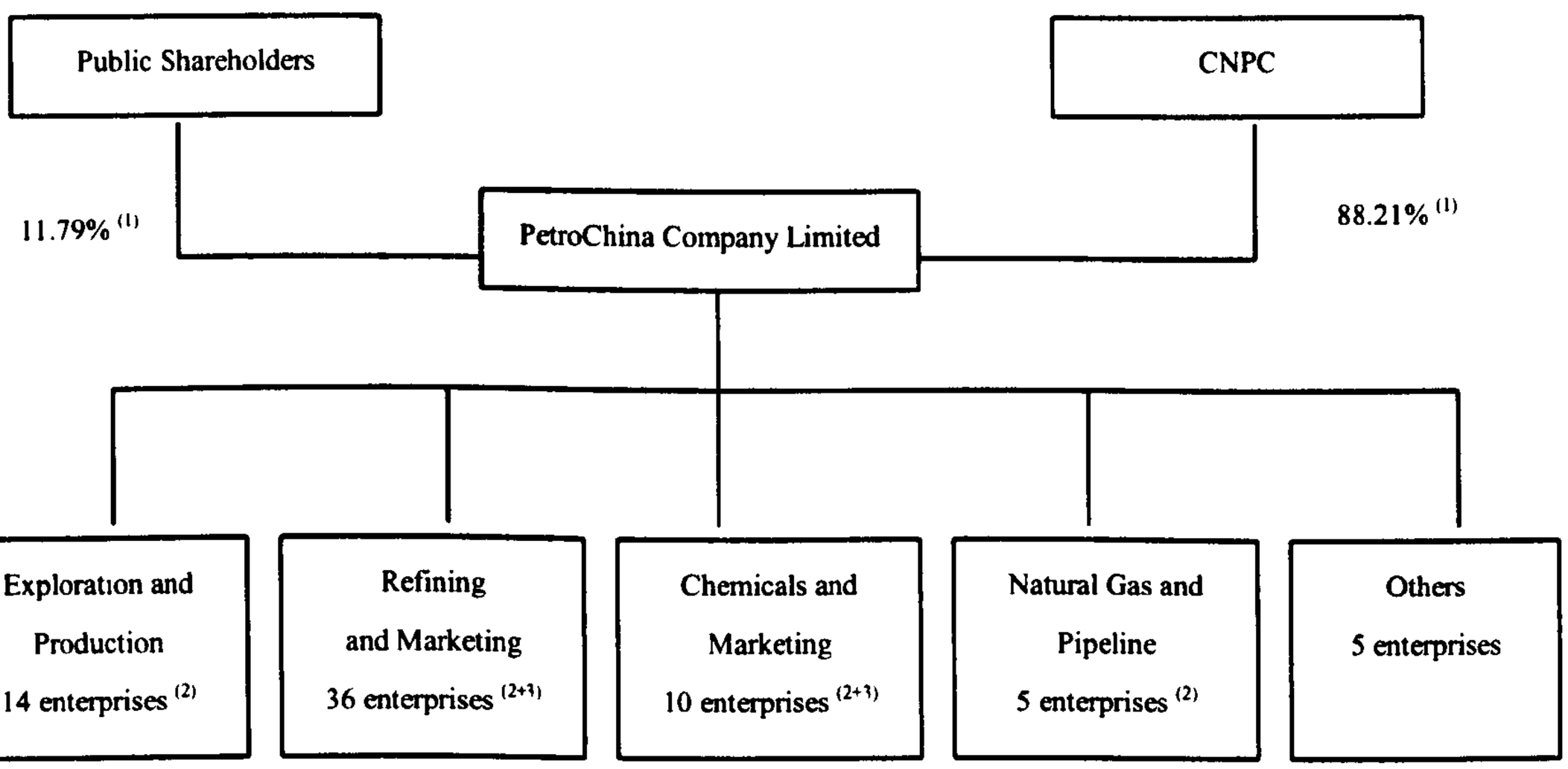
[526] IR: Investor relationship, HR: Human resources, LA: Legal affair, T&I: Technology and Information, QSE: quality, safety and environment. EC: Enterprise culture

floated only a small amount of their shares with the rest of shares held by the three respective holding companies representing the state. In the case of PetroChina the company was listed on the Hong Kong and the New York stock exchanges in April 2000 and raised US$2.89 bn by floating 10% of its shares. The remaining 90% was held by CNPC representing the Chinese government.[527] The current share structure of PetroChina is shown in figure 7.9.

Figure 7-9 Petrochina's Corporate Organisation and Shareholding Structure[528]



(1) Indicates approximate shareholding by the end of 2005.

(2) Includes subsidiary companies and branches without legal person status.

(3) Represents enterprises directly administered and operated by such segment.

(4) Includes PetroChina Planning & Engineering Institute, PetroChina Exploration & Development Research Institute, Newco, Foreign Cooperation Managing Division, PetroChina International Co.Ltd. and PetroChina Refining & Chemicals Technology Research Centre.

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[527] The 10% was worked out jointly by the Chinese government, NOCs and consultancy companies based on considerations of maintaining the control power of the government, and the situations of stock market in 1999.

[528] PetroChina. (2006). *PetroChina Company Limited FORM 20-F*. Retrieved 30th Mar 2008, from http://www.petrochina.com.cn/resource/pdf/dqbb/2005n20-F.pdf.

7.2.4 The reforms of the industrial structure: the internal reforms (the example of CNPC/PetroChina)

The reform measures since 1998 also brought in significant internal reforms to the NOCs, which will be analysed in this section by using the example of CNPC and PetroChina.

For Petrochina, the strict information disclosure requirements and the application of international accounting standards after the IPO increased the transparency of the company, and therefore the pressure on the managers to increase commercial performance. The separation of core and non core assets also helped the company in measuring the performance of its BUs clearly. CNPC's remaining businesses was also under unprecedented pressure to survive, as it was burdened with less-profitabile assets, and more than one million employees. Its main income came from service charges, lease payments and dividend income, mainly from Petrochina, which was under the scrutiny of PetroChina's shareholders.[529] Moreover, according to the agreement between CNPC and Petrochina, they both retained the right to purchase services or products from the third parties if their services and products were superior in the terms of quality or price.[530]

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[529] Ibid. p.121
[530] Ibid. p.4

7.2.4.1 PetroChina: Corporate strategy and operational goals

PetroChina had set itself clearer and more commercially driven strategy and targets after the IPO. It established a corporate strategy of developing into an international integrated oil company with the aim of increasing shareholder value, reducing cost and improving competitiveness. Based on its promise to its shareholders during the IPO, the company also established clearly defined commercial performance targets. For example, the target for the increase rate of the net profit was 10% per year, a cost cut of RMB 9 bn from 2000 to 2003, and cut personnel level by 40-50 thousand.[531] It also set its ROEC target as 12-14 % in 3-5 years from 2000 and Return on Equity ("ROE")[532] as 10-12% based on the oil prices of 16.5US$/bbl. The overall target for financing cost was 11% (with debt cost as 7.5%) through the centralised cash management system. The Debt to asset ratio[533] was promised to be reduced from 47% to 25-30% through large scale repayment of debt.[534] Better defined investment criteria were also published, with a threshold rate for return on investment set strictly as 12%.[535] The detailed business planning for each segment is listed in the table 7.10.

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[531] PetroChina. (1999). IPO Prospectus of PetroChina. Retrieved 18 Nov, 2006, from www.petrochina.com.cn, p.192. Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.247

[532] Return on Equity: a measure of profitability, net income divided by shareholder equity. Bush, J., & Johnston, D. (1998). *International Oil Company Financial Management in Nontechnical Language*. Tulsa, OK: PennWell. p.304

[533] Debt to asset ration is total liability divided by total debt. It reflect the financial situation of a company.

[534] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.248

[535] Ibid. p.246

Table 7-10 The business planning of Petrochina promised in its IPO prospectus[536]

	The targets	The measures
Exploration & production	Boost of financial performance and return on capital; 14% increase in gas production; operation cost cut from 5.05 US$/bbl in 1998 to 4.75 US$/bbl in 2002; ROEC reach 14%-16% in 3-5years	Cost cutting; shut-down of inefficient blocks; rigorous capital return requirement for investment
refining & marketing	Improve the financial and operating performance of the segment; eliminate deficit by 2000; ROEC reach 8-10% in 3-5 years; close 3--5 refineries in 3-5 years; cut cost by RMB 1.2bn; the market share of petrol station reach 18% in 3-5 years	Implement a new integrated organisational structure (shut-down of inefficient units, redefine the product portfolio structure for a better fit of market; enhance retail capacity); rigorous capital return requirements; cost-cutting measures.
Chemicals	Eliminate deficit of the segment; cut the total operation cost by RMB 1.3 bn in 3-5 years, ROEC reach 6-8%	Focus on key products; improve investment discipline; selectively increase production output of certain value-added products to meet market demand; cost reduction measures
Natural gas & pipeline	ROEC reach 3-5% in 3-5 years; the amount of sales increase at an annual rate of 17%; reduce the percentage of fertiliser user; Internal Rate of Return reaches 12% for West to East Pipeline project	To further increase its market penetration; focus on the exploration and development of large natural gas discoveries; and expand its transmission infrastructure; reduce its production and operating costs; and increase the sales price of natural gas.

7.2.4.2 PetroChina: financial management

To achieve these clearly defined goals, Petrochina also expended considerable effort in establishing a centralised financial management system, with three main components, namely, overall budgeting management system, centralised cash and debt management system, and centralised accounting management system, in order to enhance the monitoring and control system employed by the headquarters.[537]

The overall budget management system was an upgrade from the budgeting system in

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[536] PetroChina. (1999). IPO Prospectus of PetroChina. Retrieved 18 Nov, 2006, from www.petrochina.com.cn, p.192. Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.248

[537] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.252

the previous stage by emphasising more on profitability, and covering all investment, operational, as well as the financial activities of each BU. This therefore became an important monitoring and control tool for the headquarter to ensure the fulfilment of its profitability targets. The overall targets of the company were broken down into individual targets of each business unit and segment. Based on it, performance contracts were signed between the headquarters and the head of each segment and BU.[538] A typical performance contract included three key indicators, being, the profit indicators (ROEC, profit before tax, free cash flow), operational indicators (cost, expenditure, investment control indicators and other technological and economic indicators), and controlling indicators (quality, safety and environment indicators).[539]

PetroChina also established a centralised capital and debt management system, and established strict rules in controlling the investment and financial activities of BUs by using a better controlled cash management system.[540]

PetroChina also established a centralised accounting management system, with unified code of practice, hardware, and software used by all members of the company. This not only effectively increased the speed of information collection but also improved the quality of information. Furthermore, through a computer based accounting system, the financial statement was generated at the central level rather than the BU level. The BUs

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[538] Ibid. p.254

[539] Chen, M. (2005). *Budgeting Practice in China: a Case Study*. University of Dundee, Dundee.

[540] A detailed principles of the system is introduced in the chapter 5

were responsible for inputting primitive information at their terminal and the financial statements could be generated at the headquarter level. This could largely reduce the manipulation of financial and operational data at the BU level.

7.2.4.3 CNPC: internal restructuring

CNPC also emphasised on its commercially driven targets to eliminate deficit and enhance profitability in 2000, and launched a package of reform proposals for internal restructuring.[541] The company established the service sector as its major business, and decided to gradually separate or divest other supporting and social functions. By doing so, the company made it easier for the headquarters to measure the performance of each of its BU, and easier for each unit to be accountable for its respective target, therefore to gradually remove the "negative multi-task effect".[542] A detailed survey was conducted on all the existing assets and operations of CNPC. A standardised rule was introduced to shut down or sell off non-profitable or non-relevant businesses.

Measures were also taken by CNPC to enhance the performance of the company by reducing the workforce level, as the company still had around 1.06 million employees in 1999. According to a survey, 40% of the workforce was not utilised. A pay-off scheme was introduced, enabling employees to seek early retirement in return for financial

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[541] PetroChina. (1999). IPO Prospectus of PetroChina. Retrieved 18 Nov, 2006, from www.petrochina.com.cn. p.121. CNPC. (2002). *CNPC Yearbook 2001 (In Chinese)*. Beijing: The Petroleum Industry Publishing House. p.9, "several policy measurements to promote the reform and development of CNPC"

[542] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.96

benefit commensurate with their years of service with the company. Asset optimisation scheme was another means of reducing workforce by separating non-relevant assets out of CNPC together with their employees. From 2000 to 2004, 0.35 million were removed from CNPC since 2000.[543]

7.2.5 The reforms of the pricing and distribution systems

During this stage, the pricing and distribution system was under immense pressure to be further liberalised, due to the difficulty and high cost of maintaining a regulated system in a large net importer under a high price scenario,[544] the need of the government to commercialise NOCs,[545] and financial burden of NOCs and their strong lobbies. Meanwhile, the concerns over the social, political and economic impact of reforms still set the pace of the reform. Reflected these factors, the government chose a reform path of retaining control over the system, while starting a pricing formula system to link the

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[543] Ibid, p294

[544] The regulated price has a distortion effect on the economy. One example of the distortion was the overcapacity of refineries in 1990s as a result of the artificial high refinery margin. According to international practice, refinery generally is a low profit margin industry while crude oil exploration and production industry is a high risk and, at times of high prices, high return. While in China, the situation was reverse to that of international practice. The average domestic crude oil prices were much lower than that of the international prices. The average prices for domestic onshore crude oil in 1997 were 1029 RMB yuan/ton, which was $14.72/bbl after the adjustment of VAT, 30% lower than the cost of import crude oil. In terms of oil products, However, by 1997 the average domestic prices for oil products exceeded the import prices. For example, the factory gate prices for 95# gasoline were 2478 RMB yuan/ton, and 0# diesel 2190 RMB yuan/ton, which were $29.35/bbl and $27.65/bbl each, higher than the prevailing international prices of $24.62/bbl and $24.35/bbl. Yan, X., & Yang, J. (1999). *Fuelling the 21st Century China: the Report on Improving the International Competitiveness of Chinese Petroleum Industry (In Chinese)*. Beijing: The Enterprises Management Publishing House. p.186. Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform*. Beijing: Commercial Publishing House, p.30.

[545] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.99. A real liberalised price could transfer the market risk to NOCs. It also served as incentive for them to improve their performance, as their profit will be decided by the market rather than the government.

domestic oil price with the international oil prices.[546]

7.2.5.1 The reform of the pricing and distribution systems (crude oil)

The major reform measure for the crude oil pricing mechanism was the introduction of a tentative formula pricing system. Meanwhile the government retained the dominant control and the right to intervene whenever necessary.[547]

In 1998, the government implemented the formula pricing system to peg the domestic oil prices with that of the Singapore market. A guiding price was set by the government on a monthly basis and remained valid for a month, according to the average prices of crude oil in the Singapore market during the previous calendar month.[548] See table 7.11 for a sample of guiding price in 1998.

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[546] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform*. Beijing: Commercial Publishing House, p.30. p.104

[547] SDPC. (1998). The Notice on "the Reform Proposal of Crude Oil and Oil Products" (in Chinese). Retrieved 14 Feb, 2007, from http://www.qzprice.gov.cn/ZHCE-1/gjfg/1998/1998-8.htm. Wen, Q., Xiang, Z.,& Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.101

[548] SDPC. (1998). The Notice on "the Reform Proposal of Crude Oil and Oil Products" (in Chinese). Retrieved 14 Feb, 2007, from http://www.qzprice.gov.cn/ZHCE-1/gjfg/1998/1998-8.htm. Under the new system, CNPC and Sinopec submited daily prices of given crude in the Singapore market between 26th of previous month to 25th of current month to NDRC for it to calculate the benchmark prices according to them for next month. The benchmark prices were issued on the end of each month and remained valid for the next month

Table 7-11 Sample of the guiding price for crude oil in June 1998[549]

The Domestic crude oil	The crude oil for Benchmark	The guiding prices (RMB yuan)	C.I.F ($/bbl)	Import tariff RMB yuan/tom
Light	Tapis	975	14.722	16
Medium I	Minas	810	12.943	16
Medium II	Sinta	788	12.726	16
Heavy	Duli	744	12.963	16

The final settlement prices for domestic crude oil between CNPC and Sinopec were decided by the guiding prices, and a negative or positive premium negotiated between the two parties based on specific quality of crude oil at stake, domestic transportation cost, and the state of domestic supply and demand as shown in the formula below.[550] The SDPC only got involved if disputes arose between CNPC and Sinopec.

Equation 7-1 Settlement price = guiding price +/- premium

7.2.5.2 The reform of the pricing and distribution systems (oil products)

Similar to the reform of crude oil, the government implemented a formula pricing system to peg the domestic price of oil products to that of the international level. Considered the higher social impacts of the oil prducts price, the government took a more proactive approach to intervene when necessary. Since there were a wide range of products and different policies applied to them differently, this section focuses on major products such as gasoline and diesel, which both experienced several steps of reform

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[549] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.105. 1US$=8.24 RMB yuan, CIF: Cost, Insurance and Freight

[550] SDPC. (1998). The Notice on "the Reform Proposal of Crude Oil and Oil Products" (in Chinese). Retrieved 14 Feb, 2007, from http://www.qzprice.gov.cn/ZHCE-1/gjfg/1998/1998-8.htm

during this stage.[551]

The 1998 reform: In 1998, a new formula system was established for oil products. Similar to the pricing system of the crude oil, the government publicised guiding prices, and the NOCs decided settlement prices based on them. The guiding prices were established based on the price levels in the Singapore market plus import tariff. NOCs set wholesale and retail prices based on the guiding prices, domestic transportation cost, as well as retail and wholesale profit margins.[552] The NOCs were required to maintain a stable retail price in the domestic market.[553] Since 1998, the government intervened and stopped or slowed down the passs-through of the increase in international price level to the domestic market, in order to sooth the impact of surging international prices. This resulted in an enlarged gap between the international and domestic price levels.

The 2000 reform: By early 2000, the mismatch of international and domestic pricing level mentioned above caused rampant smuggling of domestic oil products outside the country. Trucks from Hong Kong and foreign airplanes chose to refill in China. The NOCs were reluctant to import crude oil in order to reduce losses. Domestic supply

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[551] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.109. The pricing system for oil products is more complex and sensitive than the system for crude oil. This is because first of all, it is more difficult to control price of oil products than control price of crude oil as the former has more players. Secondly the oil products by nature were more complicated than crude oil, which is more or less homogeneous. Thirdly, the social impact of oil products price was much higher than crude oil price as oil products are normally ultimate consumer commodity, whereas the crude prices are intermediate feedstock of refineries.

[552] People'sDaily. (2004). From a Little Trickle to a Mighty Gush. Retrieved 14th Feb, 2007, from http://english.peopledaily.com.cn/200410/06/eng20041006_159179.html.

[553] SDPC. (1998). The Notice on 'the Reform Proposal of Crude Oil and Oil Products Retrieved 14 Feb, 2007, from http://www.qzprice.gov.cn/ZHCE-1/gjfg/1998/1998-8.htm.

disruptions were frequent, and black markets started to develop. These market disorders greatly stretched the government's regulatory capacity. To tackle the problems, the government decided to adjust the domestic prices more frequently since May 2000. As a result, the domestic price levels soon caught up with the international prices.[554]

The 2001 reform: In 2001, the government adjusted the pricing system again to address several weaknesses of the previous formula mechanism. Firstly, pegging domestic prices to an offshore market, which may not necessarily reflect the domestic supply and demand trend, could accentuate surpluses or shortages in the domestic market.[555] Secondly, the pricing of domestic oil lagged behind the prices in the Singapore market, and this easiness in forecasting future domestic prices allowed players to benefit by manipulating supply.[556]

To address the above problems, a new system was introduced in 2001, which contained five main elements. First, prices in two more markets were added to benchmark the domestic prices, the Rotterdam and the New York market. Second, the prices were not any more adjusted monthly, instead, the government adjusted the guiding prices whenever the change in the international market exceeded a certain limit, which was

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[554] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.111

[555] For example, under an effective market with domestic prices influenced by domestic demand and supply, when the domestic demand exceeds supply, the domestic prices would increase, which would naturally reduce demand. However, this may not be the case for a market system with price system benchmarked with offshore pricing system.

[556] People'sDaily. (2004). From a Little Trickle to a Mighty Gush. Retrieved 14th Feb, 2007, from http://english.peopledaily.com.cn/200410/06/eng20041006_159179.html.

kept secret.[557] Third, stabilisation measures such as cap and floor prices were established by the government to curb exceptional fluctuation of domestic prices. Fourthly, more autonomy was assigned to NOCs, and they were allowed to add a premium of up to positive and negative 8%, compared to the previous level of 5%. Finally, the government liberalised certain less important oil products, such as fuel oil.[558] A domestic commodity exchange was soon established for the products.

2007 reform: In Jan 2007, a new "crude price plus cost" mechanism was implemented in pricing oil products. According to the new system, the prices of oil products were set by benchmarking a basket of crude oil (Brent, Dubai, and Minas) in the international market, plus processing cost, profit margin, tariff and other factors.[559] The new measure could therefore increase the domestic price level of oil products, which was believed to be helpful in relieving heavy losses of domestic refineries and freeing the government from the financial burden during the previous years.[560] The subsidies the government provided to the NOCs exceeded 15 billion during 2005-2006.[561]

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[557] Ibid

[558] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.112

[559] Sohu. (2007). The New Prices System for Oil Products is Implemented, Will relieve Loss of PetroChemical Industry (In Chinese). Retrieved 14th Feb, 2007, from http://business.sohu.com/20070130/n247921043.shtml. CRI. (2007). China Adopts New Pricing System for Oil Products (In Chinese). Retrieved 14 Feb, 2007, from http://english.cri.cn/2946/2007/01/30/1221@190918.htm.

[560] CRI. (2007). China Adopts New Pricing System for Oil Products (In Chinese). Retrieved 14 Feb, 2007, from http://english.cri.cn/2946/2007/01/30/1221@190918.htm.

[561] Wang, Y. (2006). Sinopec is Given a Subsidy of US$639m (In Chinese). Retrieved 15 Feb, 2007, from http://www.chinadaily.com.cn/china/2006-12/28/content_769253.htm

7.2.6 The reform of the financial and fiscal regimes

The reforms of the fiscal and financial systems remained modest during this stage, with a few minor adjustments.[562] For the fiscal regime, a package of privileged policies was employed to support the reforms of the industrial structure discussed in section 7.2.2 and 7.2.3. A new windfall tax was also introduced to reflect the record high international oil prices. For the financial regime, the dividends policy suspended during the previous stage was formally activated.

7.2.6.1 A package of taxation policies to support the reform of industrial structure from 1998 to 2000

The industrial structure discussed in section 7.2.2 and 7.2.3 could have significantly increased the tax burden of the NOCs, especially these in the VAT, the business tax, and the income tax. To ensure a success implementation of these reforms proposals, the government introduced a new package of taxation policies to relieve the tax burdens of the NOCs.[563]

Take CNPC for example, the tax burden for the VAT and the business tax could have surged radically, as the deduction previously applicable within a company, could not be deducted once it spitted into two entities. For similar reasons, the income tax of CNPC and Petrochina could also have surged after the reforms, as the taxable profit generated

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[562] CNPC. (2000). *CNPC Yearbook 1999 (In Chinese)*. Beijing: The Petroleum Industry Publishing House. Annual speech of Vice Premier Wu Bangguo.

[563] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.196-203

by PetroChina could not be reduced by the deficit of CNPC. To address these issues, the government allowed PetroChina to deduct its business tax bill from its VAT at the sales side in order to stabilise its tax burden. The government also introduced a special tax-rebate policy in 2000, according to which the income tax of PetroChina exceeding certain amount would be returned to CNPC to compensate for the losses, to be used on employee redundancy and for further development of CNPC. The government also decided to waive other one-off increase of taxes caused by the reforms, including the increase in income tax on the account of appreciation assets, the contract tax and stamp tax caused by new deals signed between CNPC and PetroChina. These new policies were more transitional policy from the government in smoothing the negative impacts of radical commercialisation reforms, rather than privileged support provided to the NOCs.

7.2.6.2 A new windfall taxation

In 2006, a new tax was introduced to ensure an increased share of government take under high oil price scenario. The new tax, named "Special Benefit Taxation" applied to revenue of the NOCs when crude oil prices exceeded 40$/bbl, with a sliding scale tax rate ranging from 20% to 40%, linked to the level of oil prices (table 7.12).[564] This windfall tax reflected the similar trend in other oil producing countries such as Venezuela and Kazakhstan. It further reflected the enhanced commercial role of the

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[564] FT. (2006, 28 March). Beijing Imposes windfall tax on oil groups. *Financial Times*. MOF. (2006). *The Method on Collecting the Special Benefit Taxation (In Chinese)*. Retrieved. from http://www.law-lib.com/law/law_view.asp?id=153850.

NOCs, and the regulatory role of the government as resource owner intending to secure its benefit from resource extraction.

Table 7-12 The Special Benefit Taxation (windfall tax)

Crude price (US$/bbl)	Tax rate
40-50 (including 45)	20%
45 ~ 50(including 50)	25%
50 ~ 55(including 55)	30%
55 ~ 60 (including 60)	35%
60	40%

7.2.6.3 The implementation of the dividends policy

In 2007 the government also decided to activate the dividend policy which had been suspended in the previous stage on account of the poor profit generated by SOEs.[565] Since 2000, following the SOE reforms discussed in section 7.1.1, the social burdens of SOEs were largely reduced, and their profit increased accordingly. Concerned about the risk of over-investment by cash-rich SOEs, and the lack of internal scrutiny mechanism for investment, the government has activated the policy and started to benefit from SOEs' dividends as a shareholder.[566] A pilot scheme is scheduled to start in 2008 which is to be followed by a formal implementation of the policy on a wider scale. This could, in theory, further formalise the financial relationship between the government and the NOCs, improve transparency and constrain inefficient investment by the NOCs.

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[565] Wen, Q., Xiang, Z., & Wu, D. (2005). *Price and Taxation Management (In Chinese)*. Beijing: Commercial Publishing House. p.181

[566] McGregor, R. (2007). Beijing Launches State Groups Dividend Plan. *Financial Times,* p.7. People'sDaily(2006)."World Bank Recommends China's Large SOEs to Pay Dividends to Central Government." Retrieved 14 March, 2007, from http://english.people.com.cn/200602/12/eng20060212_242002.html. Economist. (2006). Dividends in China: Can't Pay, Won't Pay *The Economist 27th July*.

7.2.7 The P-A relationship formed between the government and NOCs

During this stage, the pressure on the government to enhance the commercial performance of the NOCs and to liberalise the petroleum market remained high. Furthermore, the enhancement of regulatory capacity to regulate the general economy and to provide social support enabled the government to conduct more radical reforms in the petroleum sector. This trend could be reflected by the massive scale of reform in the industrial structure. The concerns over social impact of pricing system and the insufficient petroleum specific regulatory capacity prevented the government from assigning the NOCs with complete autonomy in investment. These factors and concerns set the pace of the reform and could be reflected by the cautious reforms of the pricing and distribution system, and the reluctance to remove the role of NDRC in investment.

7.2.7.1 The tasks of the petroleum sector

Profitability became a dominant performance indicator of the listed bodies of the NOCs, attributing to the separation of core assets from the non-core assets, and the public listing of the NOCs. The formula pricing system also helped to provide the NOCs with a market driven price signals to calculate their profitability indicators. Even for the remaining businesses, the content of their social functions was largely reduced, due to the enhancement of the general regulatory capacity of the government. The NOCs during this stage, were still not as free as their international peers in making decisions over investment, financing and marketing. Their respective behaviors such as investment in large scale projects domestically or internationally, had to be submitted to

the NDRC and were subject to its approval. However, the scope of control from the government had been largely reduced compared to the previous stage.

7.2.7.2 The supporting systems

In terms of the monitoring and control system, the government still retained certain elements of direct control over the NOCs either though the approval system by NDRC, the appointment of management, or even personal influence. The government still gave out direct administrative orders to NOCs when needed, for example, to require the NOCs to ensure supply of certain regions at certain price level under a severe supply shortage.[567] The government still retained the right to appoint the President of CNPC and, indirectly, the President of PetroChina. Influence could also be exerted though the appointment of senior management who are loyal to the government and the party. Meanwhile, the indirect Party system remains influential and this plays an invisible but important role for the government to influence the NOCs. This reluctance to give up control of the NOCs was mainly due to the relative weak petroleum related regulatory capacity of the government, although the government had started to address the issue. Furthermore, the concerns over the negative social impacts of oil prices prevented the government from giving up control over the pricing and distribution systems.

Despite the above direct control retained by the government, the government had

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[567] China's state oil giants may suspend gasoline exports: report. (2007, 31 August 2007). *Platts Commodity News*.

greatly enhanced commercial measures to monitor and control performance of the NOCs largely attributed to their public-listed status. In fact, the monitoring and control system from the regulator of the international stock exchange complemented the relative weak capacity of the government in regulating the NOCs.

In terms of incentives, the profitability-linked material incentive system was also developed following the reforms of the industrial structure. The listed arms of NOCs were left with less social burdens and more autonomy. Better defined profitability tasks made it easier to assign better defined tasks to senior managers, middle managers and individuals. After the reform, managers and employees in NOCs' were increasingly rewarded or sanctioned by their profitability-linked performance.[568]

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7.3 The evaluation of the reforms

The reforms during this stage were effective in enhancing the commercial performance of the NOCs. From the tasks perspective, the separation of core and non-core assets into two separate entities, and the adoption of a formula pricing system made it easier to measure the profitability performance of the NOCs. This helped to remove the negative "multi-task effect" and the "conflicts of identity effect" from the NOCs and to enhance the commercial performance of them. Even for the remaining social responsibilities taken by the NOCs, the reforms during this stage largely reduced their negative effect

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[568] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform (In Chinese)*. Beijing: Commercial Publishing House. p.271

on the NOCs' commercial performance. For example, in the case of the responsibility for security of supply, NOCs could argue for compensation from the government or even refuse to conduct certain operations ordered by the government, strengthening their nature as publicly-listed companies.

The monitoring and control system was also largely enhanced. This was partially due to the clarification of the tasks of the NOCs. The emphasis on profitability and the removal of non-commercial responsibilities made it much easier to measure the performance of the NOCs. This could also be attributed to the enhancement of the general regulatory capacity of the government, which was constantly built up during the previous stages. One core example is the employment of market style accounting standards in the country. Most importantly, the enhancement of the monitoring and control system was due to the public-listing status of the NOCs. The employment of international accounting standards and the functioning of strict monitoring and control from the international regulators and investors made the NOCs more transparent and well-governed.

The reforms had a positive impact on the NOCs, which could be reflected in the case study of CNPC and PetroChina, wherein both of them had clarified their commercial-driven strategies and annual tasks and enhanced the internal systems to ensure the fulfilment of these tasks (section 7.2.7.2). The positive impact of the reforms during this stage could be demonstrated by the ability of the company in meeting its

own commercial targets, and the enhancement of other commercial indicators, such as these scales related indicators, operational indicators and profitability indicators. As could be seen from table 7.13, PetroChina met nearly all the commitments it made during the IPO, which is a positive sign of the company in controlling its operations effectively in order to meet its targets.[569]

Table 7-13 PetroChina general performance compared with IPO promise

	IPO promise	2000	2001	2002	2003	2004	2005
ROEC (%)	9-11%	15.8	12.6	12.3	15.9	21.2	22.6
Return per share	12-14%	20.2	15.9	14.8	19.5		
Dividend rate	40-50% profit for distribution	45	45	45	45		
Ratio of debt/ net assets	25-30%	25.5	23.5	20.2	16.4		
Increase rate for profit (RMB bn)	10% based on 2000 level (29RMB bn)	55.2	46.8	46.9	69.6		

Other performance indicators including profitability were also enhanced (seen from figure 7.10-7.21). However, NOCs were still different from IOCs in many aspects. For example, the NOCs were still receiving government support, in the form of writing down of the non-performing assets and the privileged taxation policies. Furthermore, 90% of the NOCs' revenue was generated from domestic reserves, the acquirement of which was not through competitive bidding. The government still had controlling share in the NOCs. All these above factors differentiated them from a typical IOC. Therefore the comparison of the performance of the NOCs and IOCs should further be put in the context of this difference.

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[569] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform*. Beijing: Commercial Publishing House. p.273

Performance indicators related with scale: [570] As could being show from figures 7.10 to 7.14, PetroChina's growth performance was positive compared to IOCs. Its total assets, reserve, and production maintained a similar trend to that of IOCs or even outperformed IOCs in the case of production figure, despite the fact that the company maintained a much higher employee level then international majors and other NOCs.

Figure 7-10 Total assets (mn USD)

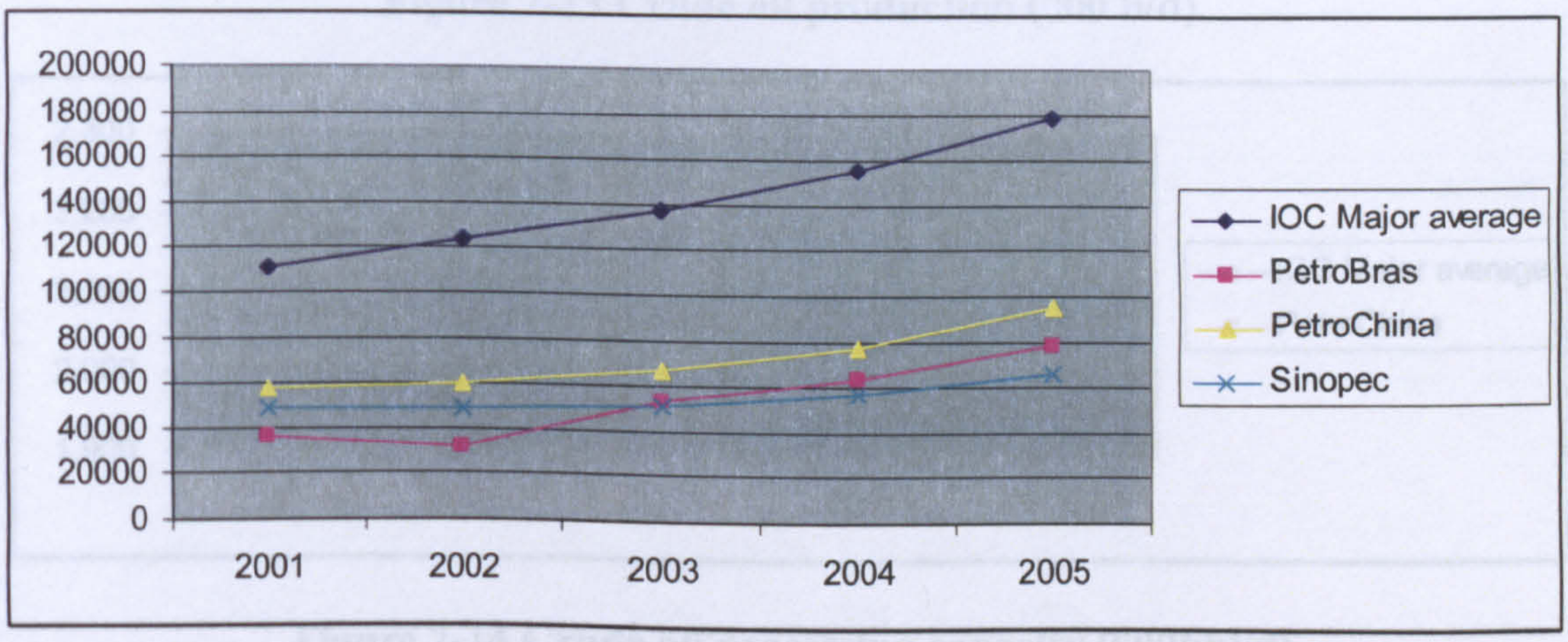
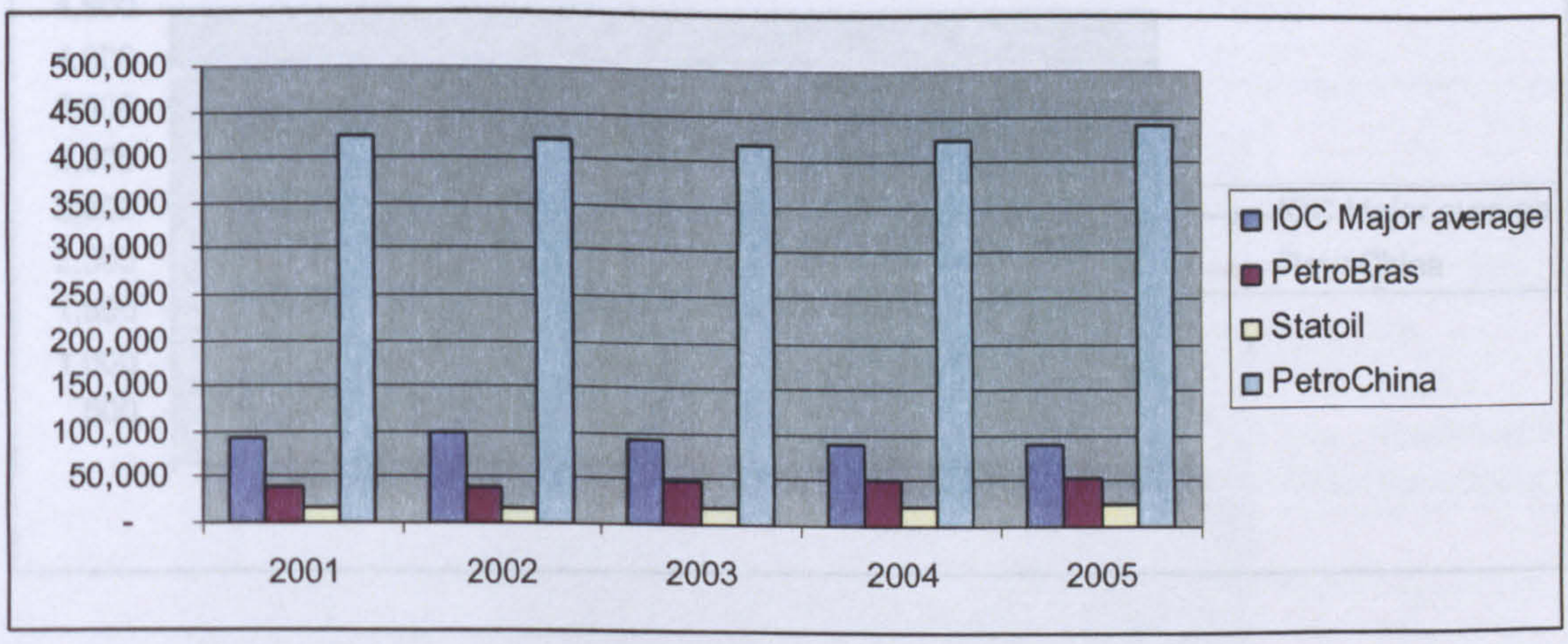


Figure 7-11Total Employee



[570] All data of this section acquired from the internal analysis of PetroChina's finance department

Figure 7-12 Crude oil reserve (mn bbl)

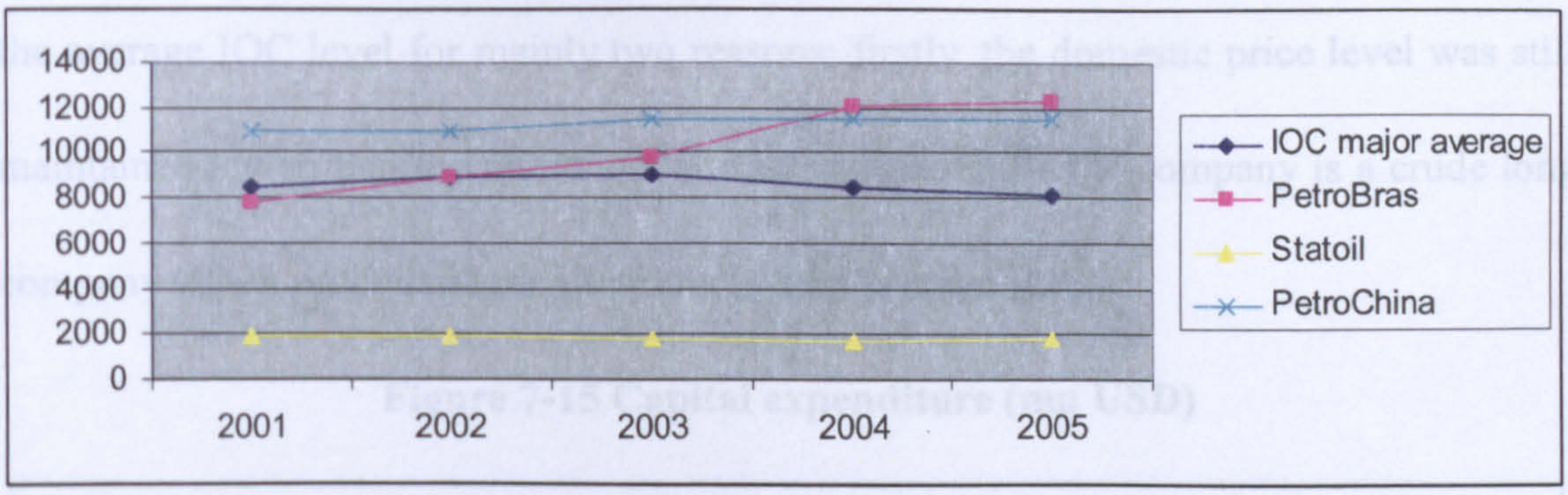


Figure 7-13 Crude oil production (000 b/d)

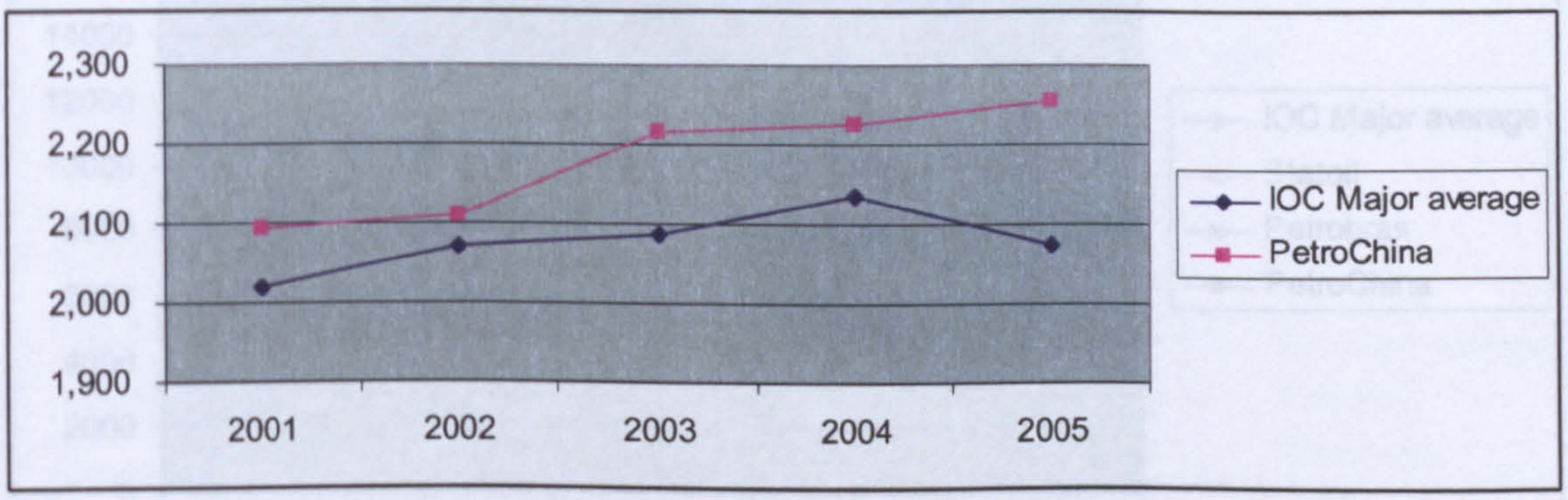
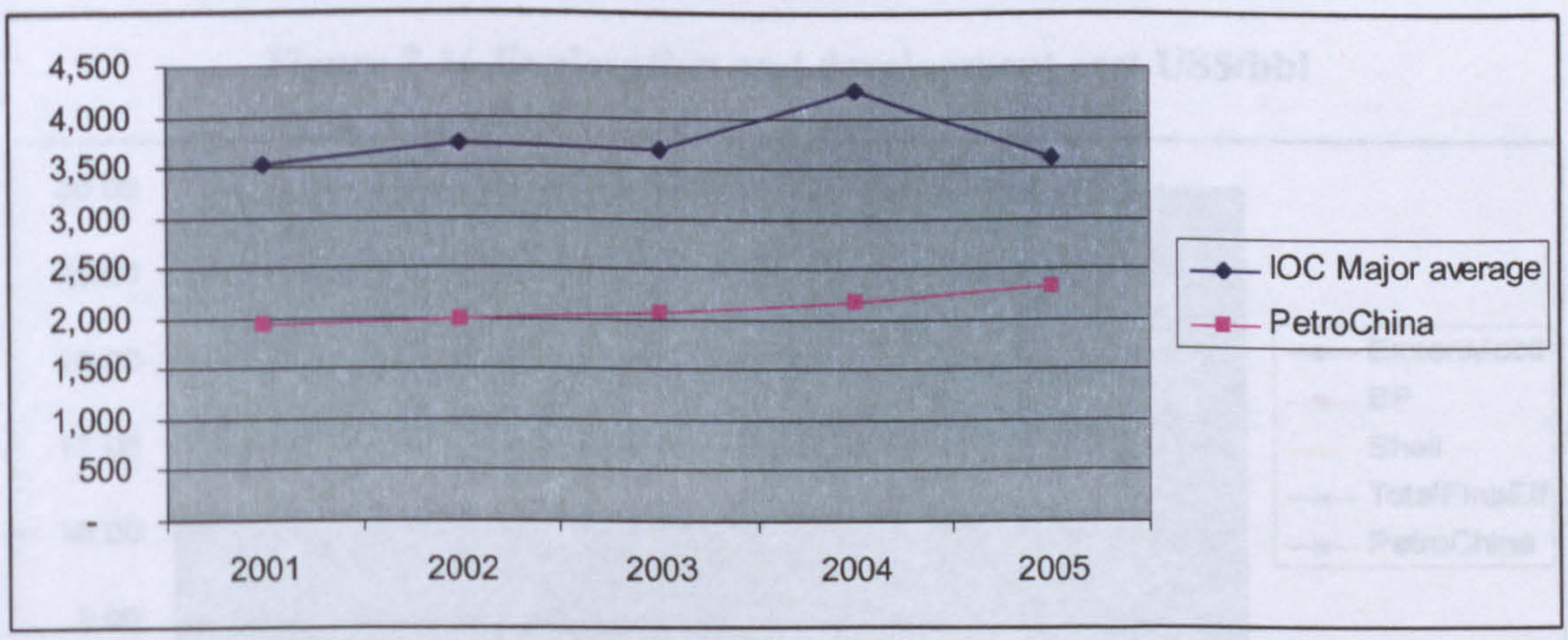


Figure 7-14 Crude oil processing capacity (000bbl/d)



Operational performance:[571] As could been shown from figures 7.15 to 7.18, PetroChina maintained a high capital expenditure, which shows the devotion of the

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[571] The operational performance in the thesis takes a broad meaning, which including the traditional performance of both capex and opex performance

company to maintain growth. However, the operational revenue was much lower than the average IOC level for mainly two reasons: firstly, the domestic price level was still maintained lower than the international one, and secondly, the company is a crude long company which produced less oil products than average IOCs.

Figure 7-15 Capital expenditure (mn USD)

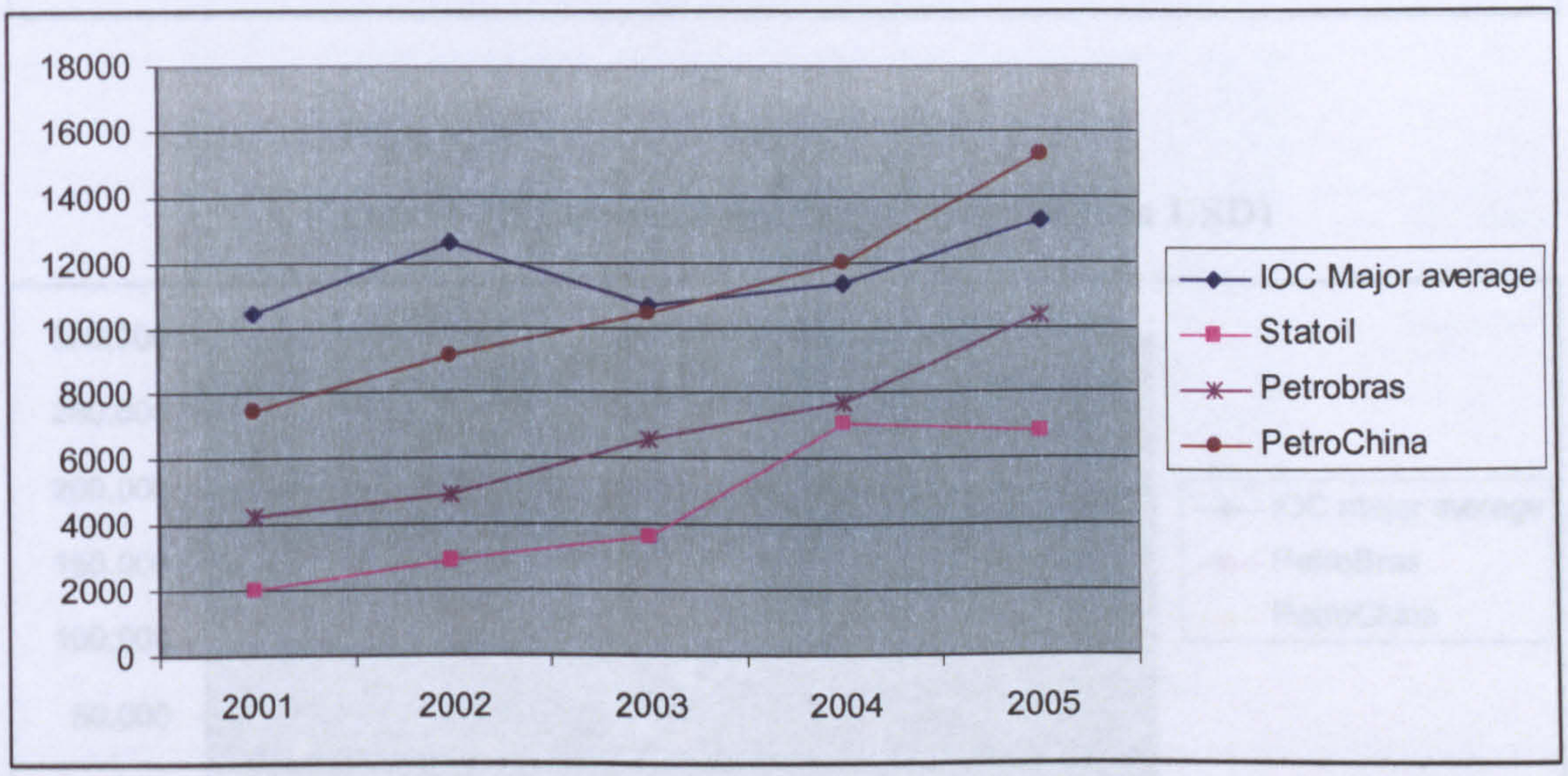


Figure 7-16 Exploration and development cost US$/bbl

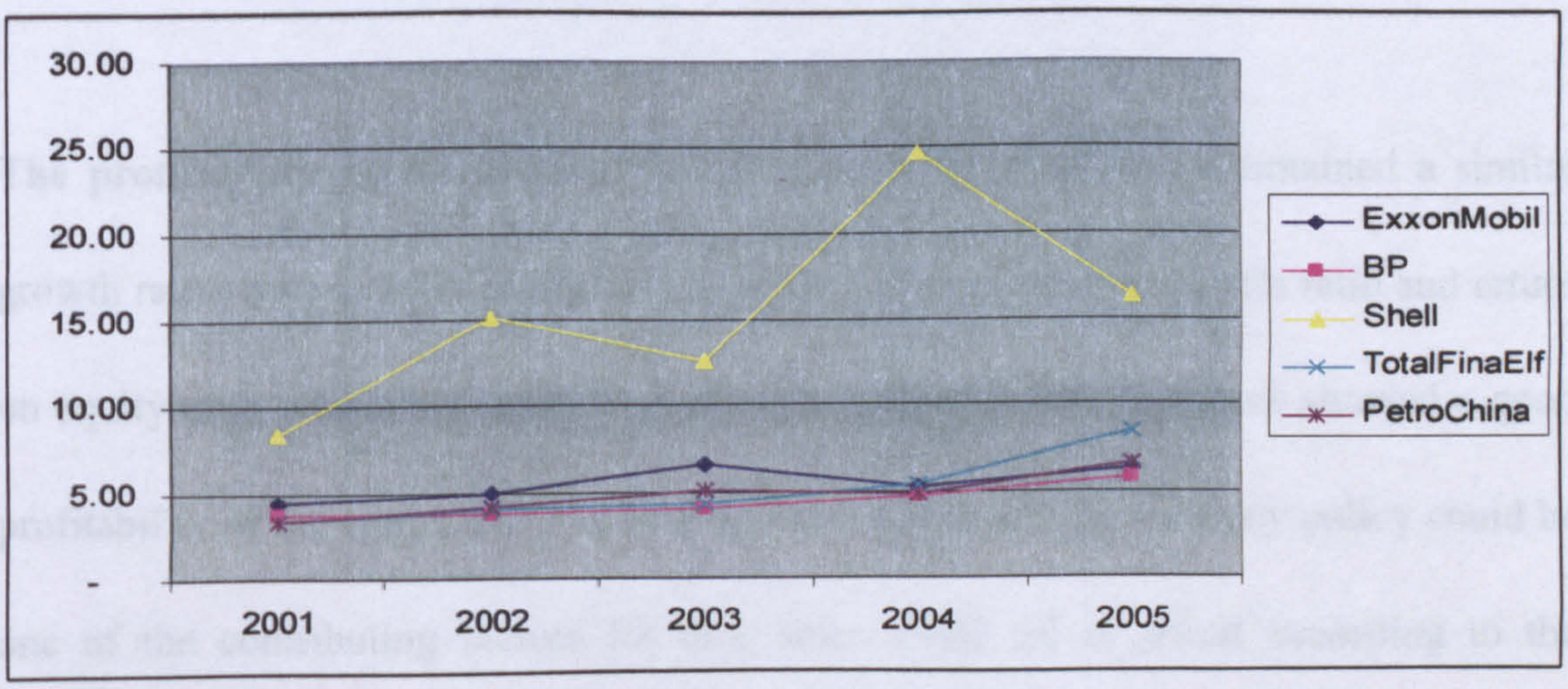


Figure 7-17 Lifting cost (USD $/bbl)

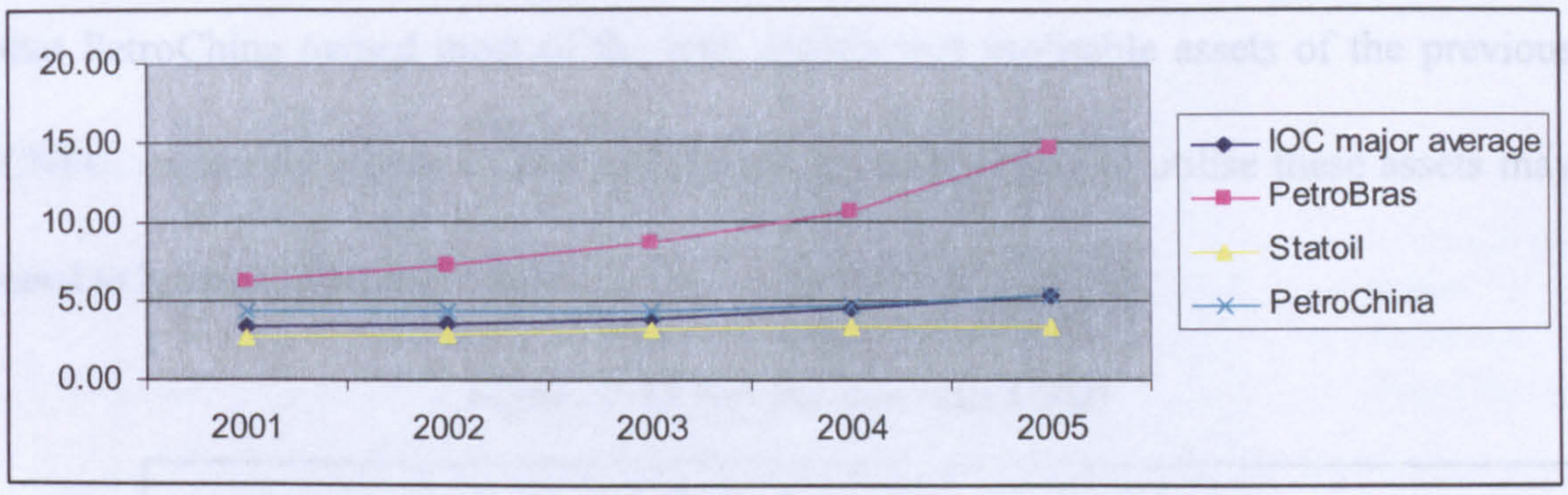
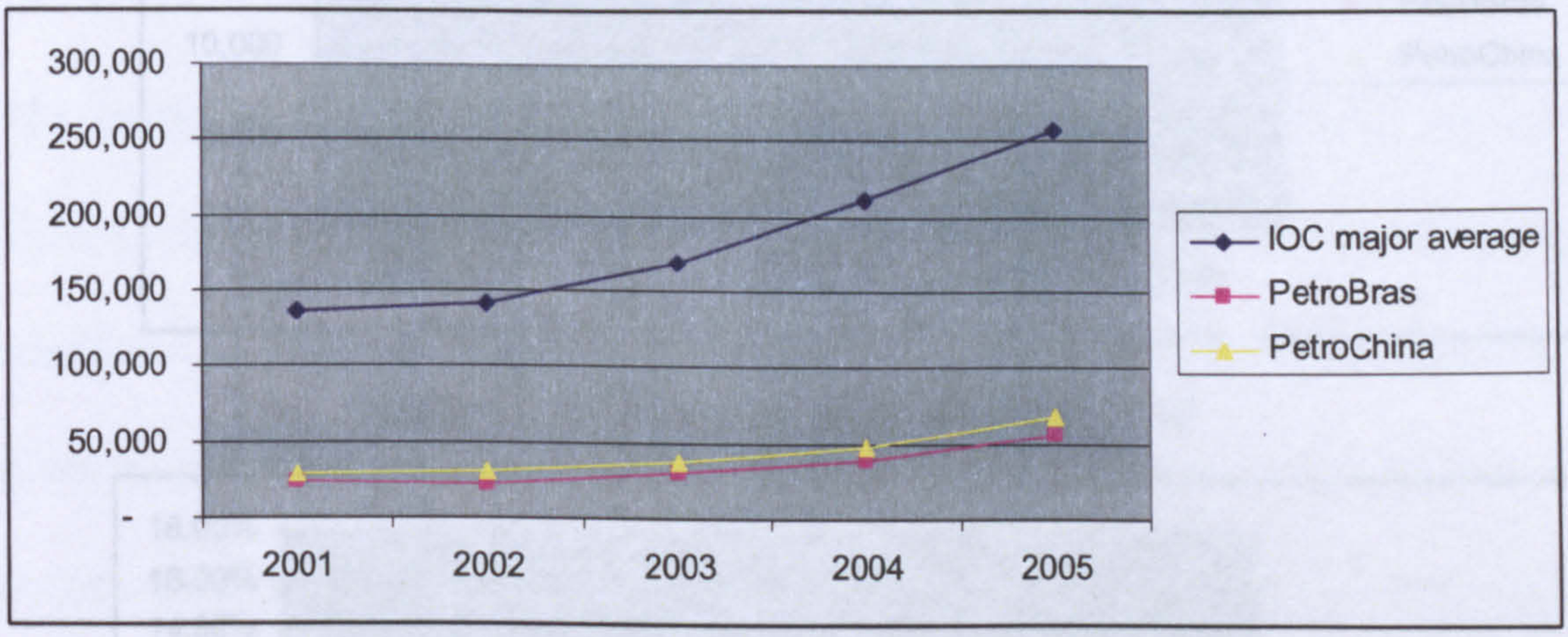


Figure 7-18 Sales and operation revenue (mn USD)



The profitability performance: The net income of PetroChina maintained a similar growth rate between 2001 and 2005 to that of IOCs. Its return on assets ratio and return on equity ratio was either equal or exceeded those of the IOCs, which showed a good profitability of the company.[572] However, the Chinese foreign currency policy could be one of the contributing factors for this, since crude oil is priced according to the international prices, whereas the services and human costs are priced according to the

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[572] The return on asset ratio measures the profitability of companies. It equals to net income divided by total assets. The return on equity ratio also measures the profitability of companies. It equals to net income divided by shareholder equity.

domestic level, lower than the international level. Also, it may be attributed to the fact that PetroChina owned most of the high quality and profitable assets of the previous CNPC, especially reserves. The real ability of the company to utilise these assets may need to be seen in a longer term.

Figure 7-19 Net income (mn USD)

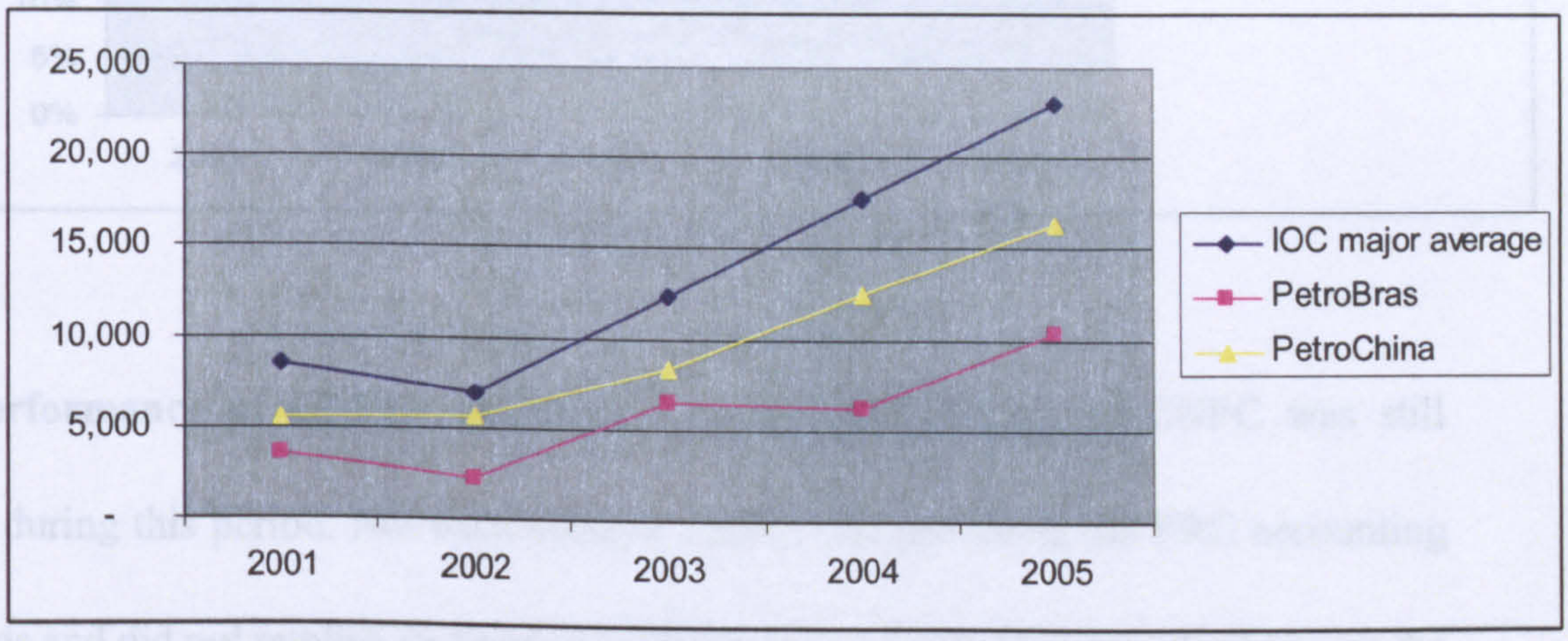


Figure 7-20 Return on assets employed (%)

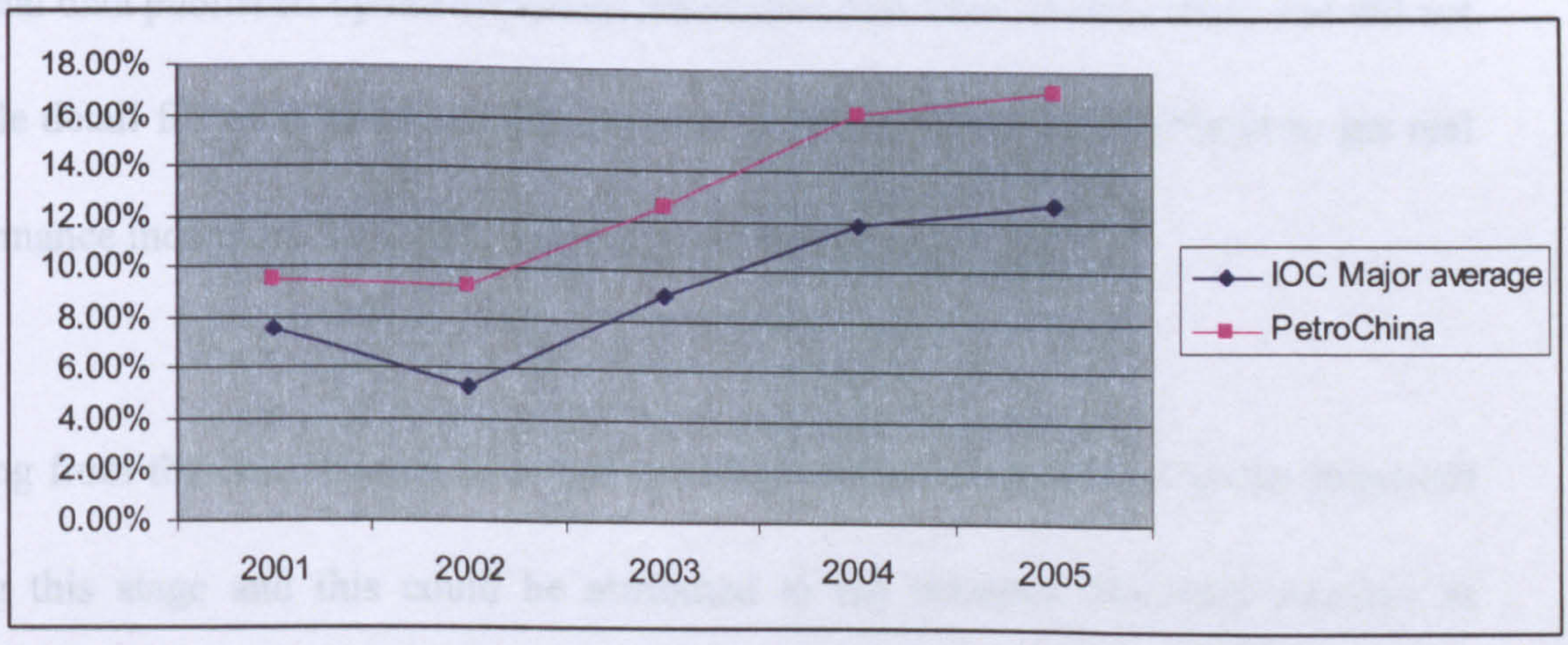
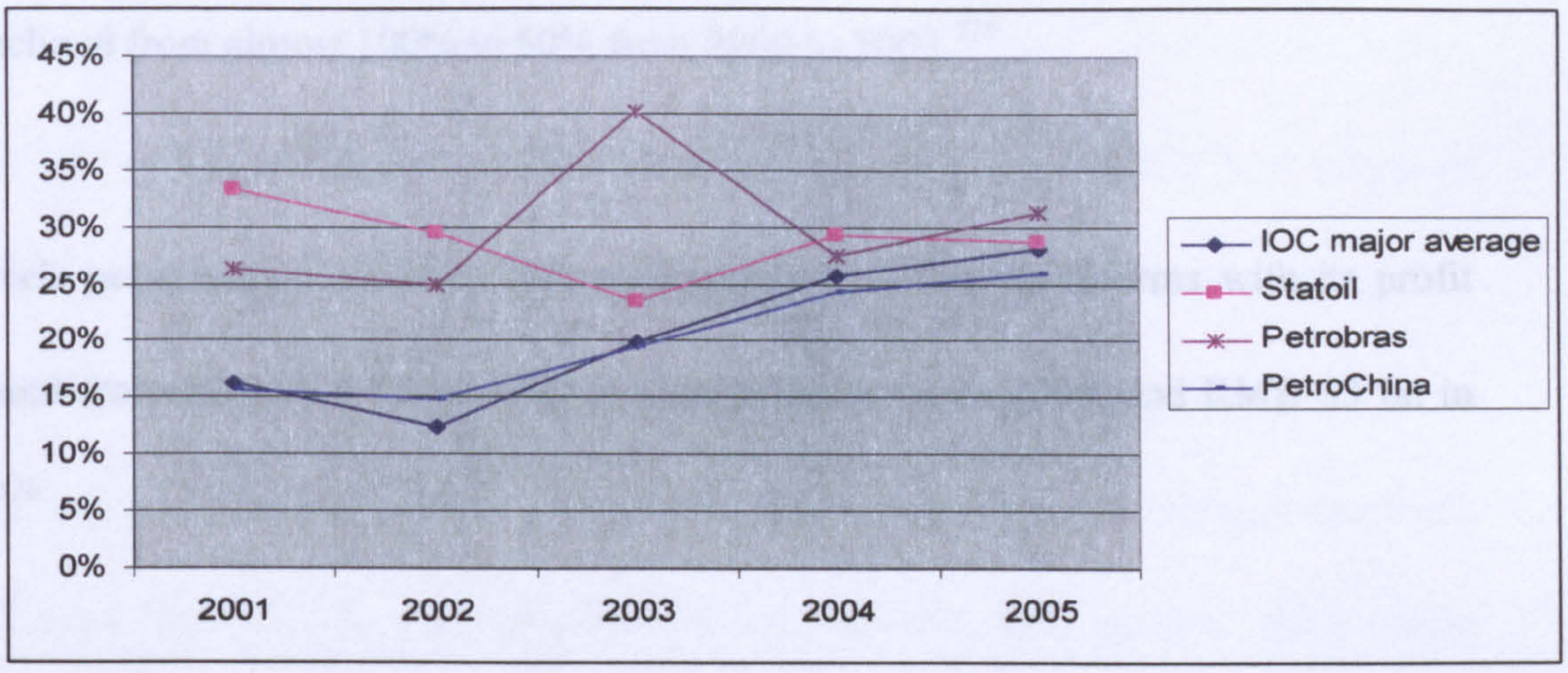


Figure 7-21 Return on equity (%)



The performance of CNPC: Information on the performance of CNPC was still limited during this period. Not only because CNPC was practising the PRC accounting standards and did not publish its financial information to the public, but also because the financial data published by the company consolidated the data of Petrochina and did not provide detail for each of its subordinate companies. This makes it difficult to get real performance indicators for CNPC's remaining operations.

Judging from the consolidated data, the overall performance of CNPC group improved during this stage and this could be attributed to the reforms. The total revenue of CNPC's remaining business increased from RMB103.1bn in 2000 to RMB 148.3 bn in 2004.[573] The profit of CNPC's remaining business increased from negative RMB 12.1bn in 2000 to positive RMB 1.8 bn in 2004.[574] CNPC also successfully expanded

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[573] Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform*. Beijing: Commercial Publishing House. p.305

[574] Ibid.

its revenue income outside PetroChina. The share of CNPC's revenue from PetroChina has declined from almost 100% to 50% from 2000 to 2003.[575]

Sinopec's performance was also enhanced significant after the reforms with its profit increased from RMB 6.4 bn in 1999 to over RMB19 bn in 2000, and RMB 83 bn in 2006.[576]

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[575] Xiang, F. (2005). The Good News and Bad News of CNPC's Remaining Business. *China Petroleum and Petrochemical Industry, 22*, 27-29. p.27. Yu, Y., Li, Q., & Jiang, L. (2005). *Restructuring and Deepen Reform*. Beijing: Commercial Publishing House. p.305

[576] Gearing up for Competition (2001). *Petroleum Economist, August.* Sinopec Annual report 2007.

8 CONCLUSION

8.1 The research question and methodology

The major subject of the thesis is National Oil Companies ("NOCs"), a group of companies participating in some part of the petroleum value chain, owned or controlled by a government. The relationship between an NOC and its government is much more complicated than those between an IOC and its shareholders due to the government's multi-dimensional role as a shareholder, resource owner and regulator. As a result, NOCs usually take non-commercial responsibilities and their governments often employ more proactive measures to intervene. Over the years, the relationship between governments and NOCs in many countries have undergone continuous reforms in order to establish an arrangement that best suits the interests of a country, the government or NOCs. The most notable trend since 1980s was the increasing degree of commercialisation of NOCs in order to enhance their commercial performance. The analysis of the effectiveness of NOC reforms is therefore important for all countries contemplating reforms of their NOCs.

This thesis explored the effectiveness of NOC reform in achieving the objective of governments, and the major factors contributing to that effectiveness or lack of it. The thesis defined effectiveness of NOC reforms in terms of achieving the objectives of the government as it acknowledged that an NOCs is both a commercial entity and an agent of government. This therefore differentiates this thesis from many other studies which have emphasised the commercial effectiveness of NOCs. The thesis chose not to

evaluate the effectiveness of reforms by using quantitative data, due to the difficulty in accessing consistent and high quality information relating to NOCs over a long period of time. Instead, it evaluated indirectly the effectiveness of NOC reform by examining the effectiveness of the P-A relationship between governments and NOCs established by these reforms. Furthermore, the thesis identified the critical factors in the process of NOC reform. Different from many other studies which looked into NOC reform over a short period of time, it viewed NOC reforms as a long-term process, in order to analyse the interactions between different stages of reform.

The Principal and Agent theory was the major analytical tool of the thesis. It employed mainly the fundamental elements of the theory, including the tasks assigned to the agent, the supporting system including monitoring and control systems and incentive system used by the principal to control the agent, as well as the possible principal and agent problems. All these elements were used in order to analyse the new P-A relationship formed by NOCs reforms in different stages.

Case study and historical analysis were also the major methodologies of the thesis, through which a detailed study of NOC reforms in China was conducted covering a long period of time between 1949 and 2006. Four distinctive stages were analysed comprising one background stage and three reform stages. For each reform stage, the thesis analysed the reform of the regulatory framework, the industrial structure, the pricing and distribution system, and the fiscal and financial regimes.

8.2 The major findings

8.2.1 The drivers of NOC reforms

The thesis identified, through the case study, the existence of a wide range of factors that drove the governments to reform their NOCs. It also found that although the ideological drivers were more dominant in setting the direction of NOC reforms, the practical drivers, such as the level of national capacity and the concerns of social impact were more critical in setting the pace of the reforms.

The case study on China's NOC reforms demonstrated the importance of the ideological changes, especially the changes in the economic ideology in reforming the NOCs. The whole transitional process of Chinese NOCs from being a government ministry to a publicly-listed and commercially driven company, from stage one to stage four, echoed a process of the Chinese economy transferring from a soviet styled central planning system to a market system. The socialist ideology prevailing in the country between 1949 and 1978 played a dominant role in the central planning style of P-A relationship between the government and the NOCs. The market-driven reforms of NOCs since 1978 were mainly supported by free market ideology adopted by the country, which argued for the role of government being focused on indirect ways such as setting effective rules, rather than operating the economy directly.

However, the thesis identified that, during these three reform stages, it was mainly the practical factors such as the level of sufficient national capacity, as well as the concerns

of the government about the negative social impact of liberalisation that set the pace of the reform, as will be seen in the following two sections (8.2.2 and 8.2.3).

8.2.2 The national capacity

The case study of NOCs reforms in China (1949-2006) showed that changes in the national capacity, especially the general and petroleum specific regulatory capacity of the government, played a crucial role in the choice of reform measures and the effectiveness of NOC reforms. Not only did the government pay careful consideration to the level of national capacity in designing its reform proposals, but also the condition of this capacity determined whether or not a package of reform measures was able to function successfully. The lack of national capacity caused the existence of non-commercial responsibilities. This complicated the controlling and monitoring of the NOCs and resulted in "multi-task effects" and "conflicts of identity effects".

During the first stage of the case study on China (1949-1978), the country took a Soviet Style, central planning system to organise and regulate its national economy. The government did not have the regulatory capacity to regulate a market economy. As a result, the petroleum sector was assigned with significant regulatory and social as well as operational responsibilities.

Since 1978, the government started to build up its own regulatory capacity and to conduct market-driven reform of the petroleum sector. However, it was not until stage

four after 1998, that the country could take radical reform measures, constrained by the limited regulatory capacity of the government. The government started to establish market-style fiscal regime, and accounting systems since 1993. Before these systems were in place, the government was unable to collect sufficient information on the NOCs, to calculate their fiscal burden, and to prevent their imprudent cost control and investment behaviour. Therefore it was unable to measure the real profitability of the NOCs.

Furthermore, since 1998, the government started to build up its own social support capacity for providing education, pension, health and unemployment support. Before these capacities were mature, the NOCs had to provide these functions on behalf of the government, which also obscured the profitability performance of the NOCs.

Due to the above factors, the market-driven reform measures taken by the government during the second and third stages (1978-1998) failed to generate positive results. The inability of the government to measure the performance of the NOCs in monitoring and controlling their operations resulted in slow increase in reserve and production indicators, continuous deficit, escalating costs and undisciplined investment. These factors also resulted in a complicated organisational structure and the existence of a large share of enterprises within the NOCs operating in non-relevant businesses with a poor performance.

During the fourth stage of the case study on China, the regulatory capacity of the government had been greatly enhanced, as a result of the cumulative efforts in the previous stages. This greatly enhanced the ability of the government to take over certain, although not all social responsibilities from the NOCs, its ability to access and interpret information on the NOCs, and its ability to monitor and control the NOCs. This enabled the government to undertake more radical reform measures, such as partial privatisation and public listing. The reforms during the fourth stage, therefore, delivered a positive outcome, which was reflected by the active internal reforms undertaken by the NOCs to effectively increase their profitability-linked commercial performance. It was also reflected by the positive profitability, cost and other major commercial performance indicators of the NOCs.

The case study of China also demonstrated in stage four that it is possible to design a special arrangement between the government and the NOCs in order to overcome the negative impact of a weak national capacity (see section 8.2.6).

8.2.3 The concerns of social impacts

The thesis also found another core factor that played an important role in NOC reform and its effectiveness, the government's concerns about the negative social and economic impact of reforms to the pricing and distribution systems. Driven by these concerns, the government kept control over the pricing and distribution systems of the petroleum sector throughout the four stages in the Case study, despite the partial liberalisation

effort trialled in different stages. The administrative pricing and distribution systems denied the availability of a fair market price which was essential in calculating an economically meaningful profitability indicator. This also resulted in a situation where the petroleum sector had its real commercial performance disguised, thus presenting it with neither an incentive nor the responsibility to enhance its commercial performance.

As shown in stages two and three, concerned about the negative economic, political and social impacts of fluctuating and high oil prices, the government continued to retain control over the pricing and distributing systems, while keeping the oil prices low. This made it difficult to measure the real profitability of the NOCs. This also greatly restricted the functioning of the fiscal and financial systems, which had already been reformed based on market driven rules. This factor also attributed to the less effective reforms during these stages.

8.2.4 The long term process of NOC reforms

The case study of Chinese NOCs also demonstrated the long-term nature of the NOC reform process, mainly because of the critical role of national capacity in NOC reforms (section 8.2.2) and the long-term process of building up national capacity. The formulation of new laws, regulations and policies, the establishment of social support systems, the building up of government institutional capacity and the training of skilled staff, the establishment of new market driven rules, and the fostering of market capacity, all took long time to put in place and to have effect.

8.2.5 The significance of historical events

The case study on China's NOC reforms also demonstrated the significance of historical events in deciding the agenda and content of NOC reforms. For example, the sudden split of the Sino-Soviet diplomatic relationship in the first stage was a major driver of the "self-sufficiency" petroleum policy employed and the "self-contained" model pursued in the country as a result of the "massive Campaign" model, which was originated in Daqing oil field. The "self-contained" model prevailed in the petroleum industry until end 1990s and had a far reaching influence to the NOC reforms in China. The significance of historical events could also be illustrated by the significance of changes of economic policies under different leaderships. Mao Zedong's tough politically and ideologically centred regime was part of the reason for the establishment of the "self-contained" model.

Deng Xiaoping's market-driven ideology enhanced the role of market in the national economy, the corporatisation of the petroleum sector, and the formalisation of the financial relationship between the government and the NOCs. Zhu Rongji's stronger and more decisive style resulted in the radical SOE reforms and the significant reforms of the industrial structure of the petroleum sector, which required substantial political will. The significance of historical events implied that the NOC reform is often country-specific experience, which requires not only general principles, but also flexibility that suits a country's institutional settings and political imperatives.

8.2.6 The experiences and lessons from the Chinese case

Three specific experiences and lessons could be drawn from the Chinese practice covering more than 5 decades.

First, for countries with extremely poor national capacity, effort could still be made to establish a suitable arrangement between the government and their NOCs, compatible with their institutional setting and national capacity. For example, China was facing a tough situation with a poor national capacity in stage one. The arrangements the government established during that stage, characterised by simple production tasks, direct and strict control, moral incentive systems and strict sanction system, was not only effective in achieving the specific government targets during that stage, but also suitable to the institutional setting and the national capacity of the country.

Second, even when a country still lacked certain components of national capacity, effort can be made to design special arrangements between government and NOCs in order to supplement the weak national capacity. In stage four, the social welfare system of the country was still not fully-developed, and therefore the NOCs still had to undertake social functions such as providing employment and pensions. The government still had insufficient capacity in terms of regulating the petroleum sector. Furthermore, the government still wanted to control the pricing and distribution systems in order to stabilise the domestic market and to minimise the negative social impact. However, the unusual practice of separating the core commercial assets from the remaining assets

including service and social functions, and the public listing of a small percentage of shares of the NOCs were effective measures in enhancing the commercial performance of NOCs.

Additionally, the formula system developed to link the domestic prices to the international system was also a positive measure in bringing in external market pressures on the NOCs, when the domestic market system was immature. In stage four, the government established the new mechanism to peg the domestic pricing with the international pricing in the major international markets. Although the mechanism had its weakness, it was effective in exposing the NOCs to the price fluctuations. This prepared the NOCs and consumers to the final liberalisation of the domestic pricing and distribution systems.

Third, the main lessons that can be drawn from the Chinese experience were that governments should consciously establish their own regulatory capacity rather than rely on NOCs, and should foster market capacity in the country. The major problems causing inefficiency in the Chinese petroleum sector during stage two to four were caused by the reliance of the government on its NOCs for regulatory and social functions, and the extremely conservative attitude the government took in reforming the system.

8.3 The limitations and further research

The main limitations of the thesis arose from its reliance on a single case study.

Although a detailed case study covering a significant length of time has the advantage of revealing insights that other methodologies are likely to overlook, the single case study is highly restricted by the nature of the specific case chosen.

For example, although China had been a large oil producer since 1960s, it had a diversified economy with petroleum sector accounting for only a modest share of GDP and government revenue. It had also been a major oil consumer country since the 1990s with significant security of supply considerations. Therefore its nature was different from many oil producing countries where the oil sector contributes a large share to the GDP and where the economy is not diversified. Additionally, China started in 1949 as a strict socialist country with Soviet style economic system. During the period of nearly six decades from 1949 to 2006, the country's economic ideology experienced a transformation from socialism to quasi-free market economy. Not many countries have a similar experience of transformation. Therefore the single case study approach has a limitation in terms of application of its specific findings to countries that are by nature fundamentally different from China

Additionally, the thesis purposely avoided significant analysis of the Principal and Agent relationship between state and government, therefore overlooking another dimension of NOCs reforms, those driven by non-laudable political or personal considerations of leading politicians and ruling parties. This was mainly because of the specific nature of the subject and the different set of theoretical tools required by such

an approach. The thesis acknowledged that in many countries, especially those with very weak economic and political capacities and where governments have a poor governance record, political and personal considerations might play an important role in driving NOC reforms, and in selections of reform measures.

In response to the limitations of the thesis in addressing the above issues, further detailed studies could be done employing a more representative and diversified sample of countries, using the framework developed by the thesis, and to test the tentative hypothesis of the thesis. Further studies could also be done on NOC reforms as a result of illaudable political and personal considerations and to explore the impacts of these reforms on the commercial performance of NOCs.

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